

RESTRICTED

ARMY

INDEX OF
AERONAUTICAL
EQUIPMENT

NAVY

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INSTRUMENTS

VOLUME 6

RESTRICTED



INDEX OF ARMY AERONAUTICAL EQUIPMENT WITH NAVY AND BRITISH EQUIVALENTS



Volume 6

Instruments



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WITH NAVY AND BRITISH EQUIVALENTS

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Volume 2 Landing Gear	AERDEXTWO
Volume 3 Oxygen and Miscellaneous	AERDEXTHREE
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106A/76	" "	" —fuel pressure	C-10	25
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106A/432	" "	Inclinometer	B-2	156
106A/435	" "	Altimeter—pressure	C-11	150
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106A/636	" "	Tube—pitot-static airspeed	AN5816-1	140
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106A/837	" "	Altimeter—pressure	AN5760-2	151
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106A/843	" "	" " "	C-9A	70
106A/844	" "	Bulb—resistance thermometer (short)	AN5525-1	117
106A/845	" "	Indicator—electric thermometer	F-8	112
106A/846	" "	" —thermocouple thermometer	B-7	103
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106A/862	" "	Indicator—single electric thermometer	A-23	96
106A/872	" "	" —tachometer	E-9A	76
106A/889	" "	" —thermocouple thermometer	B-7	103
106A/889	" "	" " " "	B-9	100
106A/890	" "	Gage unit—engine, 8 foot capillary	B-2	6
106A/891	" "	Indicator—airspeed	C-7	129
106A/906	" "	Tachometer—chronometric	C-7	69
106A/907	" "	Signal—fuel pressure	C-2	58
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106A/919	" "	Indicator—thermocouple thermometer	B-11	102
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106A/942	" "	Generator—pad mount tachometer	AN5531-1	74
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106A/1016	" "	Signal—fuel pressure	C-2	58
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106A/1085	" "	" —manifold pressure	AN5770-1	44
106A/1086	" "	Tachometer—chronometric	C-11	71
106A/1086	" "	" " " "	C-7	69
106A/1086	" "	" " " "	C-9A	70
106A/1087	" "	Gage—airspeed	F-2	135
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106A/1108	" "	Indicator—dual electric thermometer	F-10	116
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106A/1246	" "	Indicator—gyro flux gate compass master	AN5752-1	269
106A/1247	" "	Transmitter—gyro flux gate compass	AN5751-1	271
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106A/1250	" "	Indicator—remote indicating magnetic compass	AN5730	270, 275
106A/1251	" "	Control—gyro flux gate compass electrical caging	AN5754-1	268
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160B-09	" " " "	" " "	C-2	58
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160B-011	" " " "	" " "	C-2	58
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160B-019	" " " "	" " "	C-3	59
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171	" " " "	Tube—pitot-static airspeed	AN5816-1	140
171B	" " " "	" " "	AN5816-1	140
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369D-012	" " " "	" " "	AN5816-2	141
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371K-05	" " "	" " "	✓ AN5760-1	152
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371S-03	" " " "	" " "	✓ C-11	150
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505SD-01	" " " "	" " " "	A-9	255
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506	" Type	Ammeter	D-2	119
506	" " "	" " "	F-1	122
544	" Model	Generator—screw mount tachometer	E-4	72
544KN-02	" Part and Dwg	Altimeter—pressure	✓ AN5761-1	154
544KN-04	" " " "	" " "	✓ AN5761-1	154
544KN-05	" " " "	" " "	✓ AN5761-1	154
544KN-06	" " " "	" " "	✓ AN5761-1	154
544KN-07	" " " "	" " "	✓ AN5761-1	154
586BK-029	" Dwg	Indicator—airspeed	✓ D-7	133
586BK-0110	" " "	" " "	✓ C-14	130
586BK-0142	" " "	" " "	✓ F-2	135
586BK-0148	" " "	" " "	✓ C-14	130
586BK-0149	" " "	" " "	✓ F-2	135
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590SD-01	" " " "	" " "	E-9A	76
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602	" Model	Indicator—thermocouple thermometer	B-7	103
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611KN-02	" Dwg and Part	Gage—manifold pressure	D-9	43
611KN-03	" " " "	" " "	D-9	43
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657BK-0126	" Dwg	" —airspeed	✓ D-7	133
657BK-0137	" " "	" " "	✓ D-7	133
657BK-0146	" " "	" " "	✓ B-8	128
661KN-02	" " "	" —rate-of-climb	AN5825-1	162
671BK-01	" Part	Altimeter—pressure	✓ AN5760-2	151
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671K-03	" "	" "	AN5760-2	151
677G-01	" "	Generator—screw mount tachometer	AN5531-2	75
677G-02	" "	" " " "	AN5531-2	75
691BK-01	" Dwg and Part	Accelerometer aircraft	AN5745-2	126
691BK-03	" " " "	" " " "	AN5745-2	126
691CK-01	" " " "	" " " "	AN5745-2	126
691CK-04	" " " "	" " " "	AN5745-2	126
691K-02	" " " "	" " " "	AN5745-2	126
716K-03	" "	Indicator—rate-of-climb	AN5825-1	162
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727	" "	" " " "	F-9	114
727	" "	" —single electric thermometer	A-23	96
727	" "	" " " "	C-11	106
727	" "	" " thermometer	AN5790-6	89
728	" "	" " " "	C-10	105
728K-02	" Part and Dwg	Gage—manifold pressure (dual)	AN5770-2	45
728K-03	" " " "	" " " "	AN5770-2	45
731KN-02	" Dwg	Indicator—rate-of-climb	AN5825-1	162
731KN-04	" "	" " " "	AN5825-1	162
731KN-04	" Part and Dwg	" " " "	AN5825-2	160
739K-03	" Dwg	" —airspeed	F-1	134
739K-07	" "	" " " "	F-1	134
744BKN-02	" Part	Altimeter—pressure	✓ AN5760-2	151
744BKN-04	" Dwg	" " " "	✓ AN5760-4	155
744KN-02	" Part	" " " "	✓ AN5760-2	151
751K-02	" Type and Model	Indicator—dual tachometer	AN5530-2	78
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758	" " and Dwg	Compass—pilot's	AN5733-1	263
770G-01	" Model	Generator—pad mount tachometer	AN5531-1	74
771K-01	" Model or type	Indicator—tachometer	AN5530-1	77
771K-01	" " " " "	" " " "	E-9A	76
771K-03	" " " " "	" " " "	AN5530-1	77
771K-03	" " " " "	" " " "	E-9A	76
774G-01	" Part	Generator—screw mount tachometer	AN5531-2	75
781-02	" " and Dwg	Tube—pitot airspeed	G-1	144
782-02	" Model and Dwg	" " " "	G-2	145
788K-02	" Dwg	Gage—manifold pressure	AN5770-1	44
788K-03	" "	" " " "	AN5770-1	44
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811	" "	" " " "	✓ D-7	133
811	" "	" —rate-of-climb	A-7	159
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(RESTRICTED)



NUMERICAL INDEX INSTRUMENT SECTION



INSTRUMENT LIGHTING AND DIAL MARKINGS

Two basic methods are used to make instrument dial markings visible in darkness to the pilot or crew members. The instrument face may be lighted by a lamp within the instrument case (called "rim lighting") or by light from an external source, or the principal markings and pointers may be made visible through the use of a luminescent paint. In some instances, these two methods are combined.

Fluorescent lamps operated from the airplane electrical system are used for external or flood-lighting. Individual lighting used by the Army consists of a single-wire circuit, 3-volt A.C. or D.C. rim lamp, usually located in the upper right part of the case. The individual lighting used by commercial airlines usually consists of a two-wire circuit, 12 or 24-volt, A.C. or D.C. rim light. The Navy does not use individually lighted instruments.

Army and Navy dial markings and pointers may have a white finish, a natural aluminum finish, or may be painted with various materials as follows:

FLUORESCENT MATERIAL

Fluorescent material (Army Air Force specification number 14111 and AN specification AN-L-1a) glows with an orange hue (color number 65) under ultra-violet light. This material has no after-glow. Furthermore, its intensity of glow is regulated by the intensity of the ultra-violet light.

PHOSPHORESCENT MATERIAL

Phosphorescent materials (Army Air Force specification number 14102), when subject to ultra-violet light, glow with a greenish-white hue (color number 61), and have a long after-glow. That is, after the external lighting has been removed the material continues to glow, but with diminished intensity, finally fading out altogether after a period of about one hour.

RADIOACTIVE MATERIAL

Fluorescent or phosphorescent materials will glow in the presence of radioactive materials without any additional source of ultra-violet light.

Phosphorescent radioactive paint (Federal specification TT-R-58) glows brightly under ultra-violet light. When the light source is removed, the glow gradually fades until it reaches a stable, useful level.

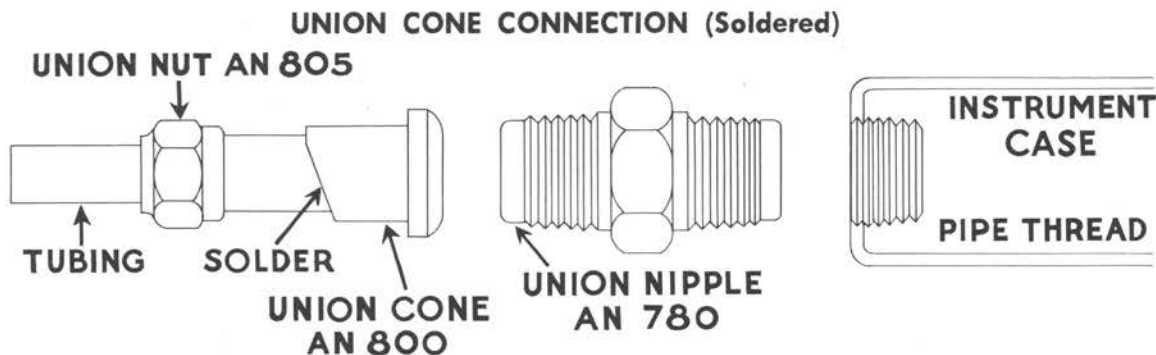
Fluorescent radioactive paint (Army Air Force specification number 14112) glows brightly under ultra-violet light. When the light is extinguished the glow drops very quickly to a readable level.



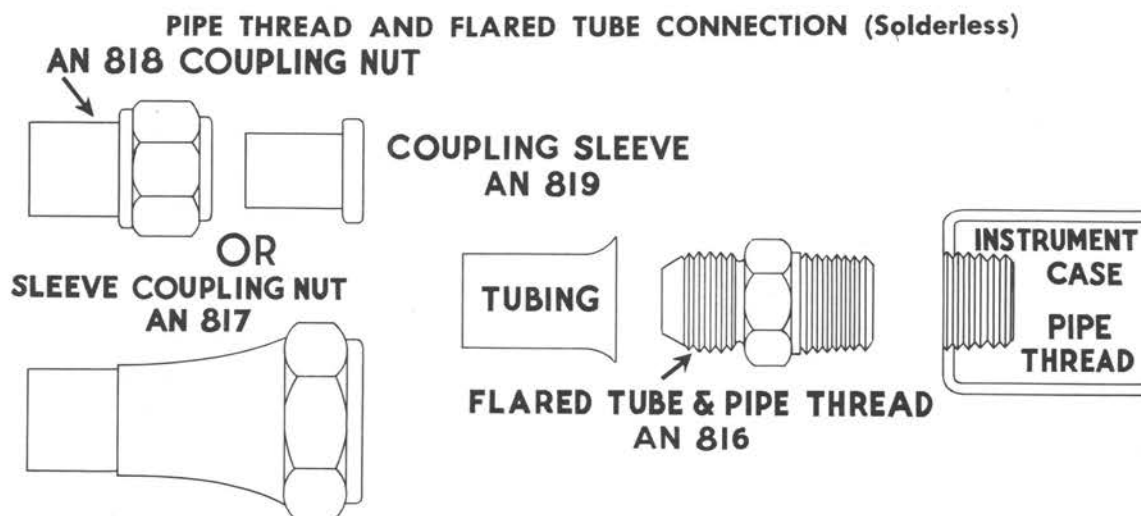
INSTRUMENT FITTINGS

Fittings are used to make proper connections between pressure tubing lines and aircraft instruments. Different series of fittings have been used by the Army and Navy. The Army has used the AC811 series and Parker special variations of the AC811 series. The Navy has used the NAF310500 series. These two series of fittings have been superseded by the AN Standard series fittings. For information as to the interchangeability of AC811, NAF310500 and AN Standard series fittings, refer to Technical Order AN 04-1-3.

The three types of fitting connections used are the union cone connection, the pipe thread and flared tube connection, and the straight thread and flared tube connection. The following sketches illustrate the various types:



This was one of the earlier types of connections used. The instrument case is supplied with an internal pipe thread into which is screwed a union nipple (AN780). A union cone (AN800) is soldered on the end of the pressure tubing. The union cone end is inserted into the chamfered end of the union nipple (AN780) and the union nut (AN805) drawn over the cone and screwed onto the union nipple (AN780) to form the connection.



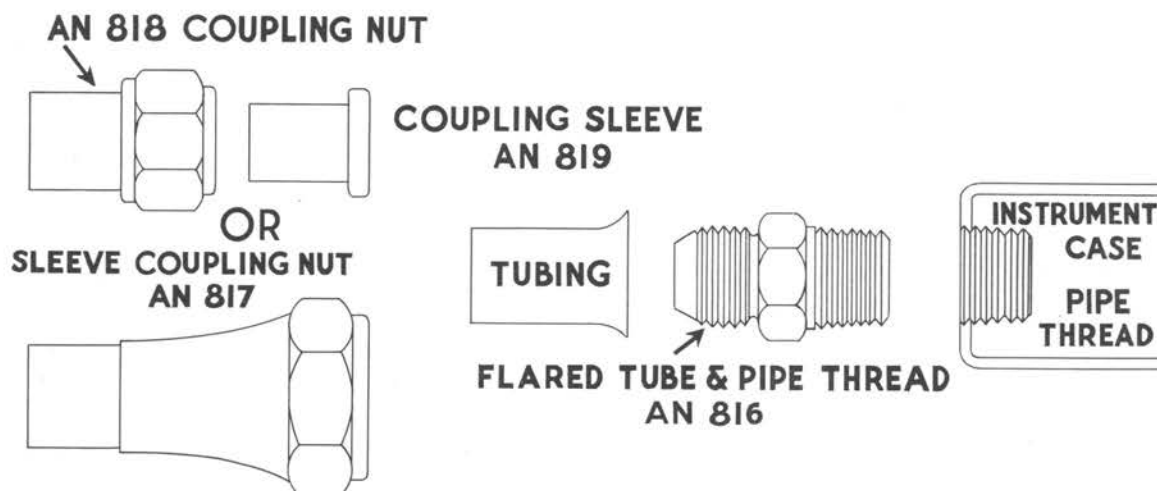
The instrument case is supplied with an internal pipe thread into which is screwed a flared tube and pipe thread nipple (AN816). The tubing end is flared to fit tightly against the cham-

(Continued on Page 3)



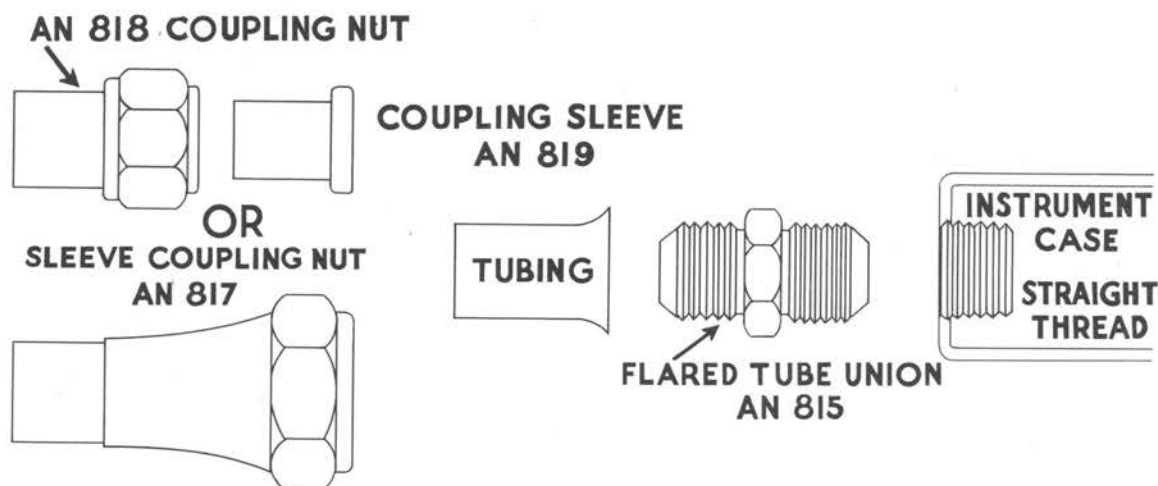
INSTRUMENT FITTINGS

(Continued from Page 2)



ferred end of the nipple. The tubing is held against the end of the nipple by the coupling sleeve, (AN819) which fits over the tubing. The coupling sleeve, in turn, is held in place by the coupling nut, (AN818) which is drawn over the sleeve and screwed onto the nipple (AN816). The sleeve coupling nut (AN817) can be used in place of the coupling nut (AN818) and coupling sleeve (AN819). The sleeve coupling nut (AN817) is drawn over the end of the flared tubing and screwed onto the nipple.

STRAIGHT THREAD AND FLARED TUBE CONNECTION (Solderless)



In this type of connection the end of the nipple (AN815) is straight threaded instead of pipe threaded, and is screwed into a boss in the instrument case (AN D10050). The arrangement is the same as the Pipe Thread and Flared Tube Connection shown above.

The above assemblies show AN series fittings. For similar assemblies of AC811 and NAF 310500 series fittings, see Technical Order AN 04-1-3, May 25, 1943.



ELECTRICAL REMOTE INDICATING INSTRUMENTS

Electrical remote indicating instruments show quantity or mechanical movement originating in a gage located remote from the instrument. This type of instrument has been classified by the following trade terms:

AUTOSYN (Pioneer Instrument Division)

This system is based on an electrical circuit which permits a receiving element in one location to closely duplicate the movements of a transmitting element located in another place.

Fundamentally, the system is composed of two alternating current motors. Single phase, alternating current is fed into the rotor or movable part of each device. These rotors do not rotate in the same way as in ordinary motors, but remain in a fixed position unless moved by some outside force. The stators, or stationary elements of both motors, are connected together by wires. With this arrangement, any position of one of the rotors will be duplicated by the other rotor.

One of the motors, called the transmitter, has its rotor connected to an actuating device such as a Bourdon gage or a diaphragm element. This actuating device is usually contained within the same case as the motor. When the gage moves, the rotor of the transmitter is turned, through a linkage.

The other motor, called the receiver, has its rotor connected to a pointer. When the rotor of the transmitter moves, the rotor of the receiver follows the motion exactly, and moves the pointer. The pointer is located within the case of the receiver, and indicates the quantity to be measured on a dial.

All autosyns operate in the same manner, and it is necessary to have the proper dial only in order to indicate any quantity. The power supply for most Autosyn units is 26 volt, 400 cycle single phase alternating current.

MAGNESYN (Pioneer Instrument Division)

The term Magnesyn is applied to the coil of the receiving unit of this remote indicating system, the coil of the transmitting unit is known as the flux-gate. The entire system is often referred to as a Magnesyn system. The rotor of the receiving unit of this system differs from the rotor of the Autosyn unit, in that it is a permanent magnet. The coils differ from the stators of the Autosyn unit in that they are electrically excited from the alternating current power supply.

TELEGON (Kollsman Instrument Division)

The Telegon system of remote indication operates on the same principle as the Autosyn and Magnesyn systems. However, the mechanical construction and electrical windings are different, since the Telegon does not employ a wound rotor or brushes. The transmitting unit of one system cannot be used with the indicating unit of another system.

SELSYN (General Electric Company)

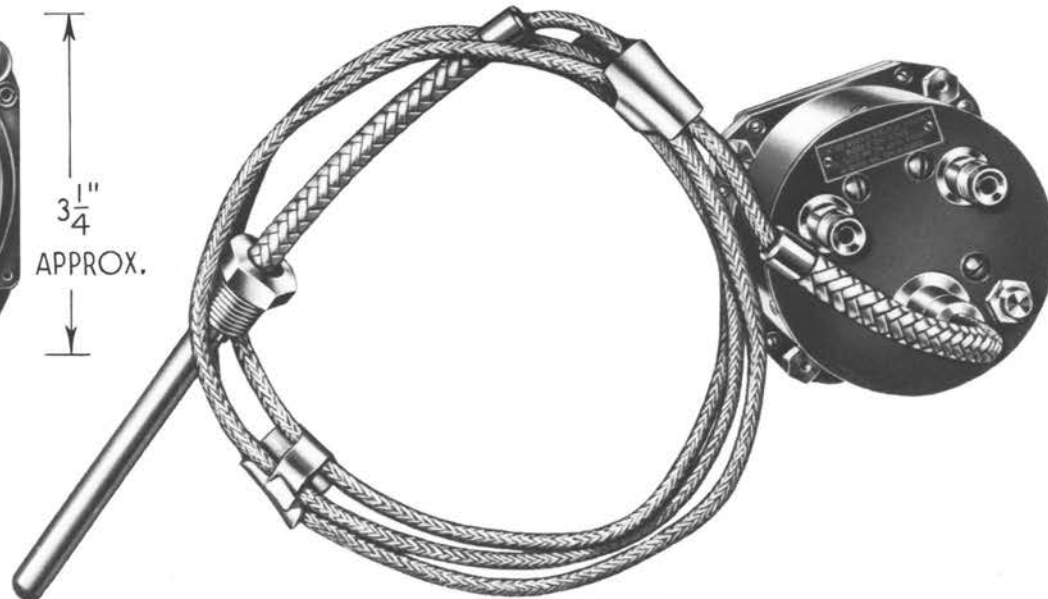
The direct current Selsyn system is composed of a transmitter unit containing a resistance winding and an indicator unit containing an induction coil. Mechanical movement of the measuring gage changes the position of the contact arms of the resistance winding and thereby determines that exact amount of current to flow through the indicator coil which will cause the indicator pointer to assume a position corresponding to the exact movement of the measuring gage. The alternating current Selsyn system operates entirely differently from the direct current Selsyn, and has not been adapted to instrument use up to this time.



ENGINE GAGE UNITS

An engine gage unit is an instrument indicating fuel pressure, engine lubricating oil pressure and engine lubricating oil temperature. It consists of a standard Army bakelite case which houses the three activating mechanisms, a dial face which contains three scales, and three pointers.

The engine gage unit is a combination of three gages, each a complete unit within itself. Two general types are available. In one type, the fuel pressure and oil pressure units are Bourdon tubes and the oil thermometer is of the capillary type, with an attached capillary tubing which comes in lengths usually 8, 15, and 22 feet. In the other type, which is more recent, the oil pressure unit is a Bourdon tube, but the fuel pressure unit is an opposed bellows, and the oil thermometer is an electrical ratio meter type used with a resistance thermometer bulb. Each of these mechanisms is described separately under the individual heading.



GAGE UNIT—ENGINE, 8 - FOOT CAPILLARY

ARMY TYPE B-2

NAMES: Engine gage unit, 8-foot capillary
Gage—engine unit, 8-foot capillary

Unit—engine gage (Navy)

DESCRIPTION: The Army type B-2 engine gage unit is a combination fuel pressure, oil pressure and oil thermometer gage.

CHARACTERISTICS:

Lighting	individual 3-volt rim lamp
Dial markings	radioactive luminescent material
Oil temperature range	0 to 100 degrees centigrade
Oil pressure range	0 to 200 pounds per square inch
Oil over pressure	400 pounds per square inch
Fuel pressure range	0 to 10 pounds per square inch
Pressure connection	cone union (two)
Weight	approximately 2 1/4 pounds
Dial size	2 3/4 inches
Depth	approximately 2 3/4 inches
Capillary length	8 feet

ARMY

A. E. REFERENCE NUMBER: 61-3350

SPECIFICATIONS:

Detail	94-27824-A
Superseded	94-27824

TYPE DESIGNATION: B-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by type B-7, A. E. R. number 61-3650.

SHIPPING DATA:

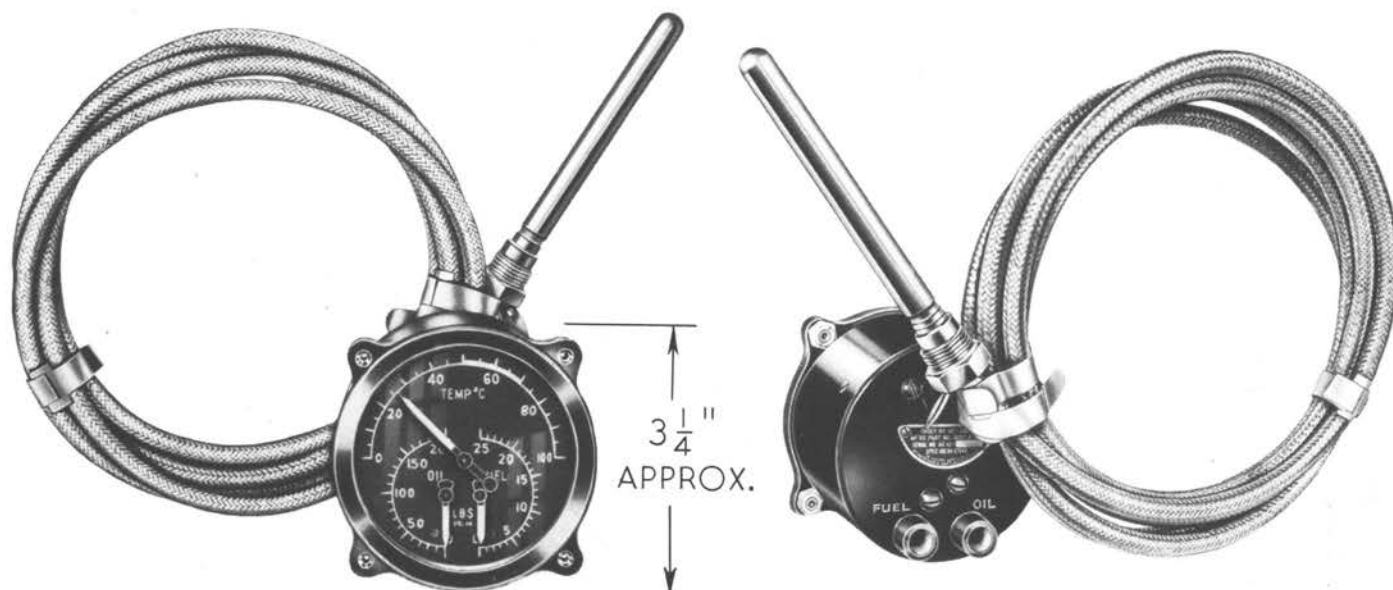
Gross weight	approximately 3 pounds
Dimensions of carton	approximately 7 by 5 by 10 inches

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Manning, Maxwell & Moore, Inc.	N-919-8	A-B	6100149500	05-75-1	106A/890
United States Gauge Co.	AW-2 3/4-15-8 AW-2 3/4-17-8	A-B C	6100149000	05-75-1	106A/890



GAGE UNIT—CAPILLARY THERMOMETER ENGINE

AN5774-8, 15, 22 FORMER ARMY TYPE B-7

NAMES: Engine gage unit
Gage—engine unit

Unit—engine gage

DESCRIPTION: This capillary thermometer engine gage unit indicates fuel pressure, engine lubricating oil pressure and engine lubricating oil temperature

CHARACTERISTICS:

Fuel pressure range	0 to 25 pounds per square inch
Oil pressure range	0 to 200 pounds per square inch
Oil over pressure	400 pounds per square inch
Oil temperature range	0 to 100 degrees centigrade
Lighting	fluorescent markings
Dial diameter	2 3/4 inches
Depth	approximately 2 3/4 inches
Pressure connections	1/8 inch internal pipe thread

Weight	Length of Capillary Tubing	AN Part Number
2 1/4 pounds	8 feet	AN5774-8
3 pounds	15 feet	AN5774-15
3 3/4 pounds	22 feet	AN5774-22

ARMY

A. E. REFERENCE NUMBER: See chart column 5.

SPECIFICATIONS:

Detail	AN-G-17
Superseded	94-27943

AN DRAWING NUMBER: AN5774

TYPE DESIGNATION: Former type B-7.

A. S. C. STOCK NUMBER: See chart column 7.

TECHNICAL ORDER NUMBER: 05-75-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped in carton approximately 7 by 5 by 10 inches.

NAVY

SPECIFICATIONS:

Detail	AN-G-17
Superseded	BuAer Specs. SQ-76, SQ-77

AN DRAWING NUMBER: AN5774—supersedes BuAer drawing number 6638.

F. S. S. C. STOCK NUMBER: See chart column 6.

PROCUREMENT DATA: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

(Continued on Page 8)

INTERCHANGEABILITY AS NOTED BY NUMBERS IN COLUMN 9

Models are used in services as noted in column 3

A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	AN Part Numbers	A. E. Reference Number	F. S. S. C. Number	A. S. C. Stock Number	British Reference Number	Interchangeability	Remarks
Moto Meter Gauge & Equipment Division	9543-A-8	A-B	AN5774-8	61-3650	88-G-1000	6100153869	106A/540	*	
	9754-A-8	A-B	AN5774-8	61-3650		6100153866	106A/540	*	
	9779-A-8	C						*	
	10057-A-8	A-B	AN5774-8	61-3650		6100153867	106A/540	*	
	10229-A-8	A-B	AN5774-8	61-3650		6100153869-2	106A/540	*	
	10281-A-8	N-B	AN5774-8				106A/540	*	
Manning, Maxwell & Moore, Inc.	6546-12A-8	B-C	AN5774-8	61-3650		6100143865	106A/540	*	
	6548-73A-8	A-B						*	
	6548-96A-8	B-C						*	
United States Gauge Co.	AW-2 3/4-19-L-8	C	AN5774-8	61-3650			106A/540	*	
	AW-2 3/4-19-T-8	B-C						*	
	AW-2 3/4-19-V-8	B-C						*	
	AW-2 3/4-19-AF-8	C						*	
	AW-2 3/4-19-AG-8	C						*	
	AW-2 3/4-19-AH-8	A						*	
Moto Meter Gauge & Equipment Division	9543-A-15	A-B	AN5774-15	61-3950	88-G-1007	6100153873	106A/720	**	
	9754-A-15	A-B	AN5774-15	61-3950				**	
	9779-A-15	C						**	
	10057-A-15	A-B	AN5774-15	61-3950				**	
	10229-A-15	A-B	AN5774-15	61-3950				**	
	10281-A-15	N-B	AN5774-15					**	
Manning, Maxwell & Moore, Inc.	6546-12A-15	B-C	AN5774-15	61-3950		6100153872	106A/720	**	
	6548-73-15	A-B	AN5774-15					**	
	6548-73A-15	A-B	AN5774-15					**	
	6548-96A-15	B-C	AN5774-15					**	
United States Gauge Co.	AW-2 3/4-19-L-15	C	AN5774-15	61-3950		6100153871-6	106A/720	**	
	AW-2 3/4-19-T-15	A-B-C						**	
	AW-2 3/4-19-V-15	B-C						**	
	AW-2 3/4-19-AF-15	C						**	
	AW-2 3/4-19-AG-15	C						**	
	AW-2 3/4-19-AH-15	A-B	AN5774-15	61-3950				**	
Moto Meter Gauge & Equipment Division	9543-A-22	A-B	AN5774-22	61-4100		6100153876	106A/1332	***	
	9754-A-22	A-B	AN5774-22	61-4100				***	
	9779-A-22	C						***	
	10057-A-22	A-B	AN5774-22	61-4100				***	
	10229-A-22	A-B	AN5774-22	61-4100				***	
	10281-A-22	B-C						***	
Manning, Maxwell & Moore, Inc.	6546-12A-22	B-C	AN5774-22	61-4100		6100153875	106A/1332	***	
	6548-73-22	A-B						***	
	6548-73A-22	A-B						***	
	6548-96A-22	B-C						***	
United States Gauge Co.	AW-2 3/4-19-L-22	C	AN5774-22	61-4100		6100153874-35	106A/1332	***	
	AW-2 3/4-19-T-22	A-B-C						***	
	AW-2 3/4-19-V-22	B-C						***	
	AW-2 3/4-19-AF-22	C						***	
	AW-2 3/4-19-AG-22	C						***	
	AW-2 3/4-19-AH-22	A-B	AN5774-22	61-4100				***	
	AW-2 3/4-19-AD-22	A-B	AN5774-22	61-4100		6100153874-3	106A/1332	***	

*8 foot lengths. All interchangeable within their own group, but not interchangeable with those marked ** or ***, because of length.

15 foot lengths. All interchangeable within their own group, and with those marked *, but not with those marked *, because of length.

***22 foot lengths. Interchangeable with all within their own group, and, where none of the other groups are available, may be used in place of those marked * or **.

GAGE UNIT—CAPILLARY THERMOMETER ENGINE

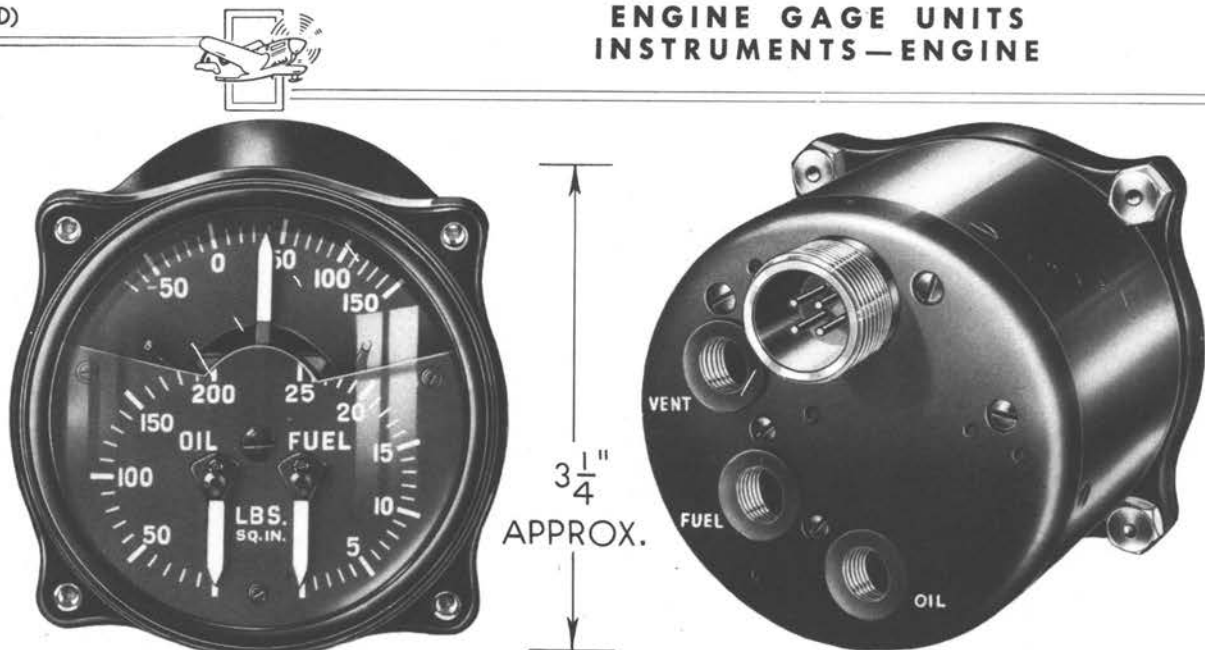
(Continued from Page 7)

ENGINE GAGE UNITS
INSTRUMENTS—ENGINE

(RESTRICTED)



(RESTRICTED)

**GAGE UNIT—ENGINE (ELECTRICAL THERMOMETER)****AN5773-1 FORMER ARMY TYPE B-8 F. S. S. C. NUMBER 88-G-1020**

NAMES: Engine (electrical thermometer) gage unit
Engine gage unit

Gage—engine unit
Unit—engine gage (Navy)

DESCRIPTION: This type AN5773-1 engine gage unit is a combination fuel pressure, lubricating oil pressure and lubricating oil temperature gage.

CHARACTERISTICS:

Markings	fluorescent
Temperature range	-70° to +150° centigrade
Oil pressure range	0 to 200 pounds per square inch
Oil over pressure	600 pounds per square inch
Fuel pressure range	0 to 25 pounds per square inch
Pressure connections	three 1/8 inch internal pipe thread
Weight	approximately 1 1/8 pounds
Dial size	2 3/4 inches diameter
Depth	approximately 3 1/2 inches
Thermometer (electrical plug)	AN3106-16S-1S
Thermometer (bulb)	AN5525
Voltage	12 or 24 volt D.C.

RELATIONSHIP OF PARTS: Used with:

Resistance thermometer bulb AN5525-2, A. E. Reference Number 61-8901

ARMY

A. E. REFERENCE NUMBER: 61-4200

SPECIFICATIONS:

Detail AN-G-18
Superseded 94-27423

AN DRAWING NUMBER: AN5773

TYPE DESIGNATION: AN5773-1 (former Army type B-8)

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN5773-1

SPECIFICATIONS:

Detail AN-G-18
Superseded BuAer Spec. SQ-103

AN DRAWING NUMBER: AN5773

F. S. S. C. STOCK NUMBER: 88-G-1020

PROCUREMENT STATUS: Standard. G. E. F.
—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By
Moto Meter Gauge & Equipment Division	10322-A	A-N
Thomas A. Edison, Inc.	33351	A-N
United States Gauge Co.	AW-23/4-28-F AW-23/4-28-E	A-N C



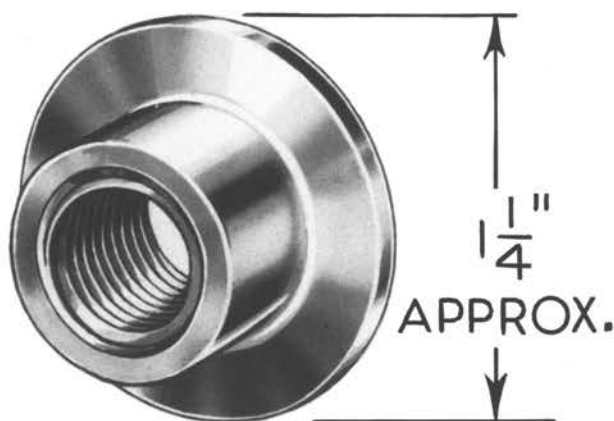
FUEL MIXTURE INDICATORS

The fuel mixture indicator is an instrument which continuously shows, through analysis of the exhaust gases of the engine, the proportion of gasoline and air in the fuel mixture entering the airplane engine. Through its use the pilot is enabled to set his carburetor mixture controls so that the mixture is not lean enough to injure the engine and not rich enough to cause high fuel consumption.

The assembly consists of an indicator mounted on the instrument panel and an analysis cell mounted in the engine nacelle; there are also sampling tubes mounted in the exhaust pipe and connected by tubing to the analysis cell, to convey the exhaust gas sample. The sampling tubes are threaded into small flanges welded into the engine exhaust stack; one faces upstream and collects samples of gas continuously, the other faces downstream and returns the analyzed gas to the exhaust pipe.

The analysis cell has four sensitive elements, of equal electrical resistance, arranged as a simple Wheatstone bridge. One pair of the elements is exposed to the exhaust gas as it comes from the sampling tube, and the other pair of elements is exposed to air. The thermal conductivity of the exhaust gas varies as the fuel/air ratio varies, and such difference in the thermal conductivity will cause a corresponding change in the electrical resistance of the pair of elements of the Wheatstone bridge which are exposed to the exhaust gas. Hence, when a change occurs in the fuel/air ratio, an unbalance in the Wheatstone bridge results, causing a movement of the pointer in the indicator.

There are indicator assemblies for a single engine and for dual engines. The single engine assembly consists of one analysis cell, one indicator with a single pointer and two sampling tubes. The dual engine assembly has two analysis cells, one dual indicator and four sampling tubes.



FLANGE—MOUNTING

NAME: Mounting flange

DESCRIPTION: This flange is welded to the exhaust manifold of an airplane engine, and receives the sampling tube of the fuel mixture assembly.

CHARACTERISTICS:

Size 1 1/4 inches outside diameter, 3/8 inch thick

RELATIONSHIP OF PARTS: Used with:
Fuel mixture indicator assemblies.

ARMY

A. E. REFERENCE NUMBER: 61-4901

SPECIFICATIONS:

General 94-27844-C.

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

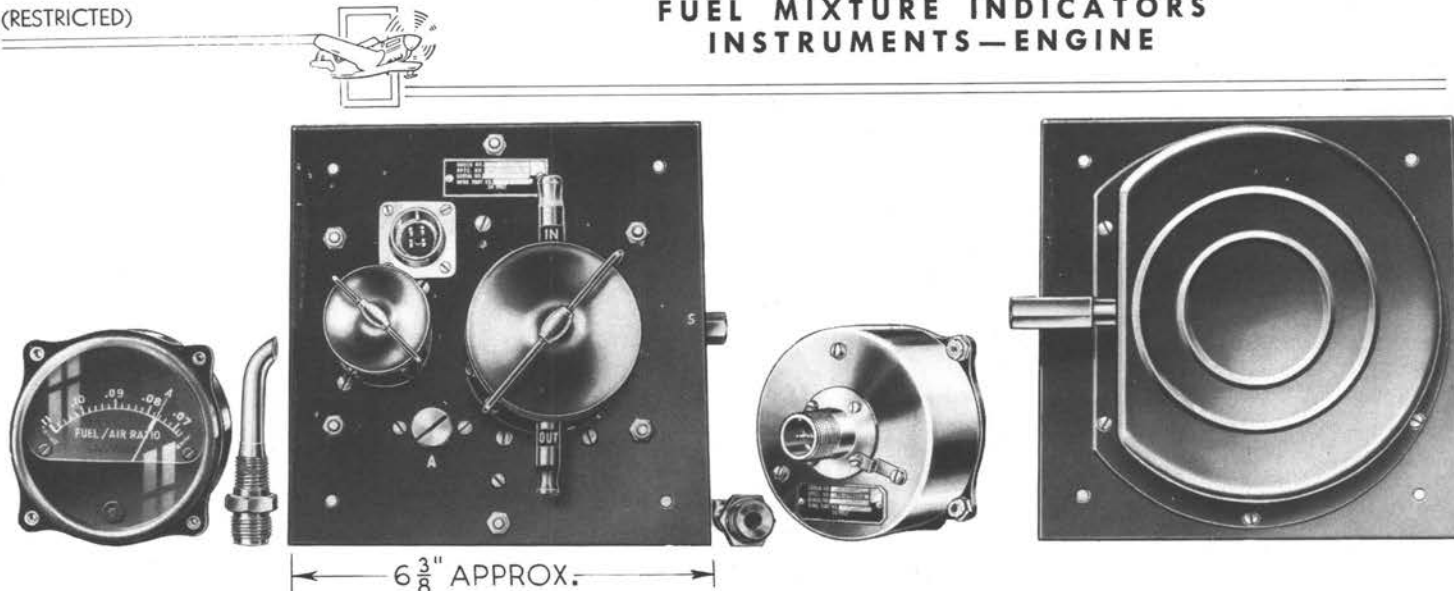
NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number
Charles Engelhard, Inc.	H-321	A	6100105350	05-3C-1
Cambridge Instrument Co.	10221	A	6100105300	05-3AB-1 05-3AA-1

FUEL MIXTURE INDICATORS INSTRUMENTS—ENGINE



INDICATOR ASSEMBLY—FUEL MIXTURE ARMY TYPE A-7

NAMES: Fuel mixture indicator assembly
Exhaust gas analyzer

Analyzer—exhaust gas

DESCRIPTION: This assembly consists of an indicator, an analysis cell and two sampling tubes.

CHARACTERISTICS: Dimensions:

Indicator	approximately 3 1/4 by 3 1/4 by 5 inches (including ballast tube)
Analysis cell	approximately 6 3/8 by 6 3/8 by 5 inches
Sampling tubes	approximately 3 inches long, each
Weight	approximately 4 pounds
Voltage	12 volts, direct current
Markings	fluorescent material

RELATIONSHIP OF PARTS: Used with:

Two fuel mixture indicator flanges A. E. Reference Number 61-4901

ARMY

A. E. REFERENCE NUMBER: 61-4900

SPECIFICATIONS:

General	94-27844
Detail	94-27992-A

TYPE DESIGNATION: A-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-7A indicator assembly.

SHIPPING DATA: Shipped as a complete assembly including indicator, analysis cell and two sampling tubes.

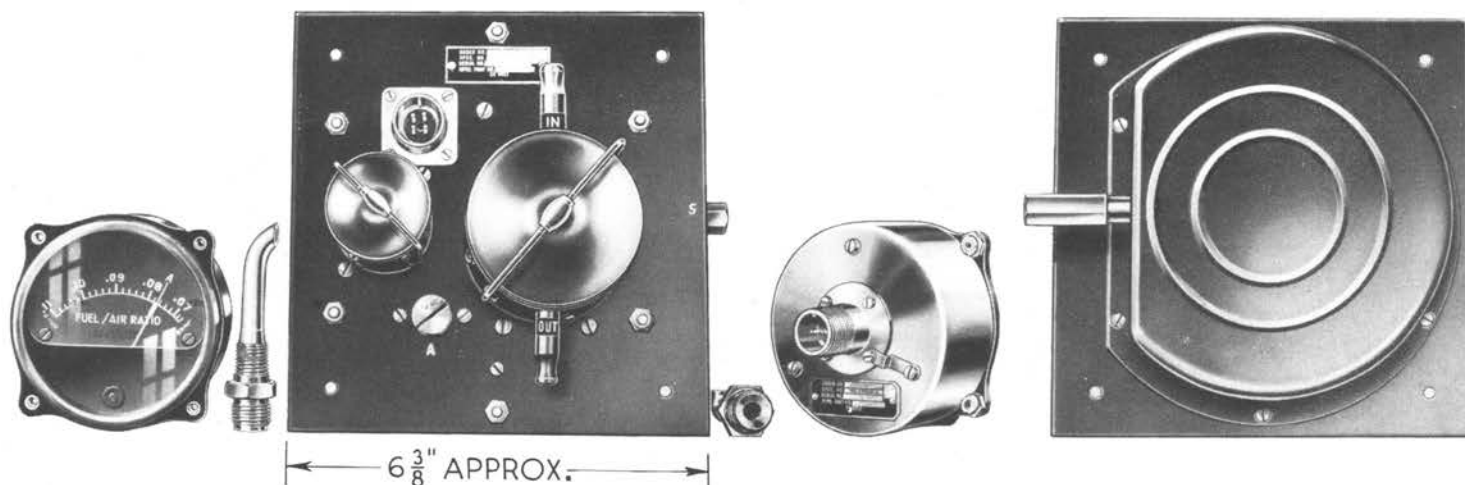
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Cambridge Instrument Co.	Consisting of: ASSEMBLY 11606	A-B	6100214765	05-3AA-1	106A/1445
	Indicator 11622		6100214767		106A/1446
	Analysis cell 11627		6100046795		106A/1447
	2 sampling tubes 10219		6100458250		106AH/162
	Consisting of: ASSEMBLY 12661	A-B	6100214755	05-3AA-1	106A/1445
	Indicator 11622-1		6100214767-5		106A/1450
	Analysis cell 11627		6100046795		106A/1447
	2 sampling tubes 10219		6100458250		106AH/162
Charles Engelhard, Inc.	Consisting of: ASSEMBLY 102341	A-B	6100214768	05-3C-1	106A/1440 *
	Indicator H-376		6100214760		106A/1113
	Analysis cell R-33		6100046792		106A/1441
	2 sampling tubes H-323		6100458550		106AN/46

*REMARKS: This assembly is identical with Army Type A-7A indicator assembly made by this manufacturer.



INDICATOR ASSEMBLY—FUEL MIXTURE

ARMY TYPE A-7A

NAMES: Fuel mixture indicator assembly
Exhaust gas analyzer

Analyzer—exhaust gas

DESCRIPTION: This assembly consists of an indicator, an analysis cell and two sampling tubes.

CHARACTERISTICS: Dimensions:

Indicator	approximately 3 1/4 by 3 1/4 by 2 7/8 inches
Analysis cell	approximately 6 3/8 by 6 3/8 by 5 inches
Sampling tube	approximately 3 inches long, each
Weight	approximately 3 1/4 pounds
Voltage	12 volts, direct current
Markings	fluorescent material

RELATIONSHIP OF PARTS: Used with:

Two fuel mixture indicator flanges..... A. E. Reference Number 61-4901

ARMY

A. E. REFERENCE NUMBER: 61-4910

SPECIFICATIONS:

General	94-27844-C
Detail	94-27992-B
Superseded	94-27992-A

TYPE DESIGNATION: A-7A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army type A-7 assembly.

SHIPPING DATA: Shipped as a complete assembly including an indicator, analysis cell and two sampling tubes.

NAVY

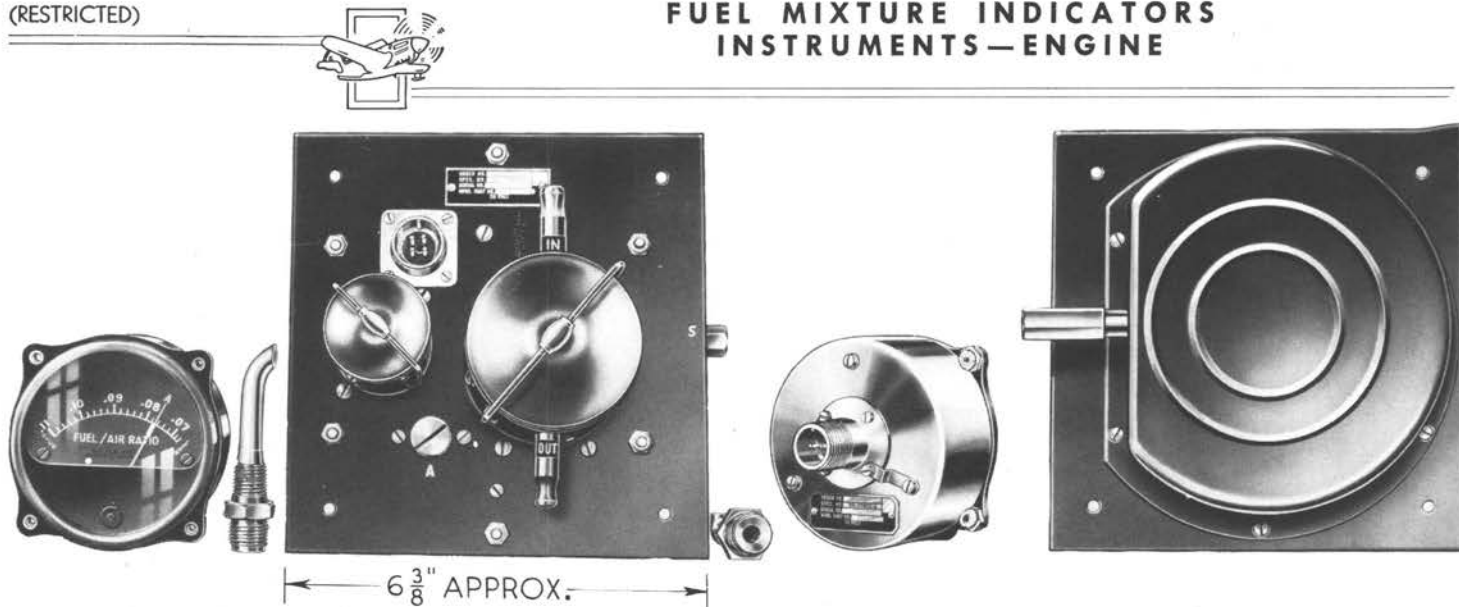
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Cambridge Instrument Co.	Consisting of: ASSEMBLY 13081	A-B	6100214772	05-3AA-1	106A/1424
	Indicator 13077		6100214773		106A/1448
	Analysis cell 13080		6100046850		106A/1449*
	2 sampling tubes 10219		1600458250		106AH/162
	Consisting of: ASSEMBLY 13451	A-B			106A/1424
	Indicator 13439				106A/1451
	Analysis cell 13080		6100046850		106A/1449*
	2 sampling tubes 10219		6100458250		106AH/162
Charles Engelhard, Inc.	Consisting of: ASSEMBLY 102341	A-B	6100214768	05-3C-1	106A/1440
	Indicator H-376		6100214760		106A/1113
	Analysis cell R-33		6100046792		106A/1441
	2 sampling tubes H-323		6100458550		106AN/46

*Former A. S. C. Stock Number 6100046025.

FUEL MIXTURE INDICATORS INSTRUMENTS—ENGINE



INDICATOR ASSEMBLY—FUEL MIXTURE ARMY TYPE B-5A

NAMES: Fuel mixture indicator assembly
Exhaust gas analyzer

Analyzer—exhaust gas

DESCRIPTION: This assembly consists of an indicator, an analysis cell, and two sampling tubes.

CHARACTERISTICS: Dimensions:

Indicator	approximately 3 $\frac{1}{4}$ by 3 $\frac{1}{4}$ by 2 $\frac{7}{8}$ inches
Analysis cell	approximately 6 $\frac{3}{8}$ by 6 $\frac{3}{8}$ by 5 inches
Sampling tube	approximately 3 inches long
Weight	approximately 3 $\frac{1}{4}$ pounds
Voltage	24 volts, direct current
Dial markings	fluorescent luminescent material

RELATIONSHIP OF PARTS: Used with:

Two fuel mixture indicator flanges, A. E. Reference Number 61-4901

ARMY

A. E. REFERENCE NUMBER: 61-4950

SPECIFICATIONS:

General	94-27844-C.
Detail	94-27932-B.
Superseded	94-27932-A.

TYPE DESIGNATION: B-5A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit including indicator, analysis cell and two sampling tubes.

NAVY

There is no Navy equivalent for this item.

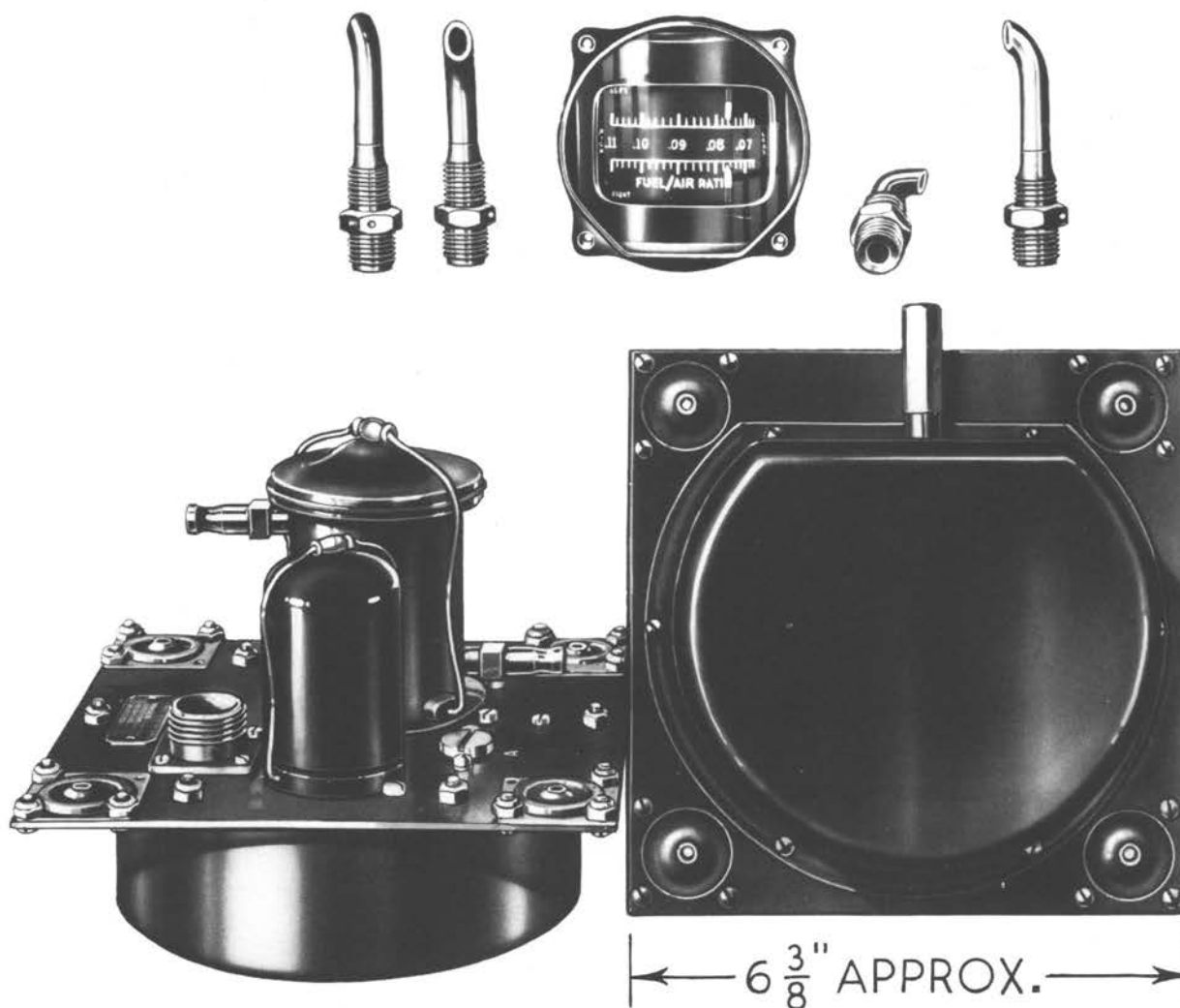
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Cambridge Instrument Co.	Consisting of: ASSEMBLY 13151	A-B		05-3AA-1	106A/1421
	Indicator 13077		6100214773		106A/1448
	Analysis cell 13079		6100047280		106A/1452
	Sampling tube 10219		6100458250		106AH/162
	Consisting of: ASSEMBLY 13771	A-B			106A/1421
	Indicator 13439				106A/1451
	Analysis cell 13079		6100047280		106A/1452
	Sampling tube 10219		6100458250		106AH/162
Charles Engelhard, Inc.	Consisting of: ASSEMBLY 109526	A-B		05-3C-1	106A/1442 *
	Indicator H-403		6100047260		106A/1420
	Analysis cell R-45				106A/1443
	Sampling tube H-323		6100458550		106AN/46

*This instrument, Army type B-5.



FUEL MIXTURE INDICATORS INSTRUMENTS—ENGINE



INDICATOR ASSEMBLY—FUEL MIXTURE ARMY TYPE B-6

NAMES: Fuel mixture indicator assembly
Exhaust gas analyzer

Analyzer—exhaust gas

DESCRIPTION: This instrument consists of a dual indicator assembly, two analysis cells and four sampling tubes for use in a twin engine airplane.

CHARACTERISTICS:

Dimensions:

Indicator	approximately 3¼ by 3¼ by 3¼ inches
Analysis cells	approximately 6½ by 6½ by 5⅜ inches
Sampling tubes	approximately 3 inches long, each
Weight	approximately 4¾ pounds
Voltage	24 volts, direct current
Markings	fluorescent material

RELATIONSHIP OF PARTS: Used with:

Four fuel mixture indicator flanges.....A. E. Reference Number 61-4901

(Continued on Page 16)



INDICATOR ASSEMBLY—FUEL MIXTURE

(Continued from Page 15)

ARMY

A. E. REFERENCE NUMBER: 61-5050

SPECIFICATIONS:

General.....94-27844-C.

Detail.....94-27933-A.

TYPE DESIGNATION: B-6

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type B-6A indicator assembly.

SHIPPING DATA: Shipped as a complete unit including an indicator assembly, two analysis cells and four sampling tubes.

NAVY

There is no Navy equivalent for this item.

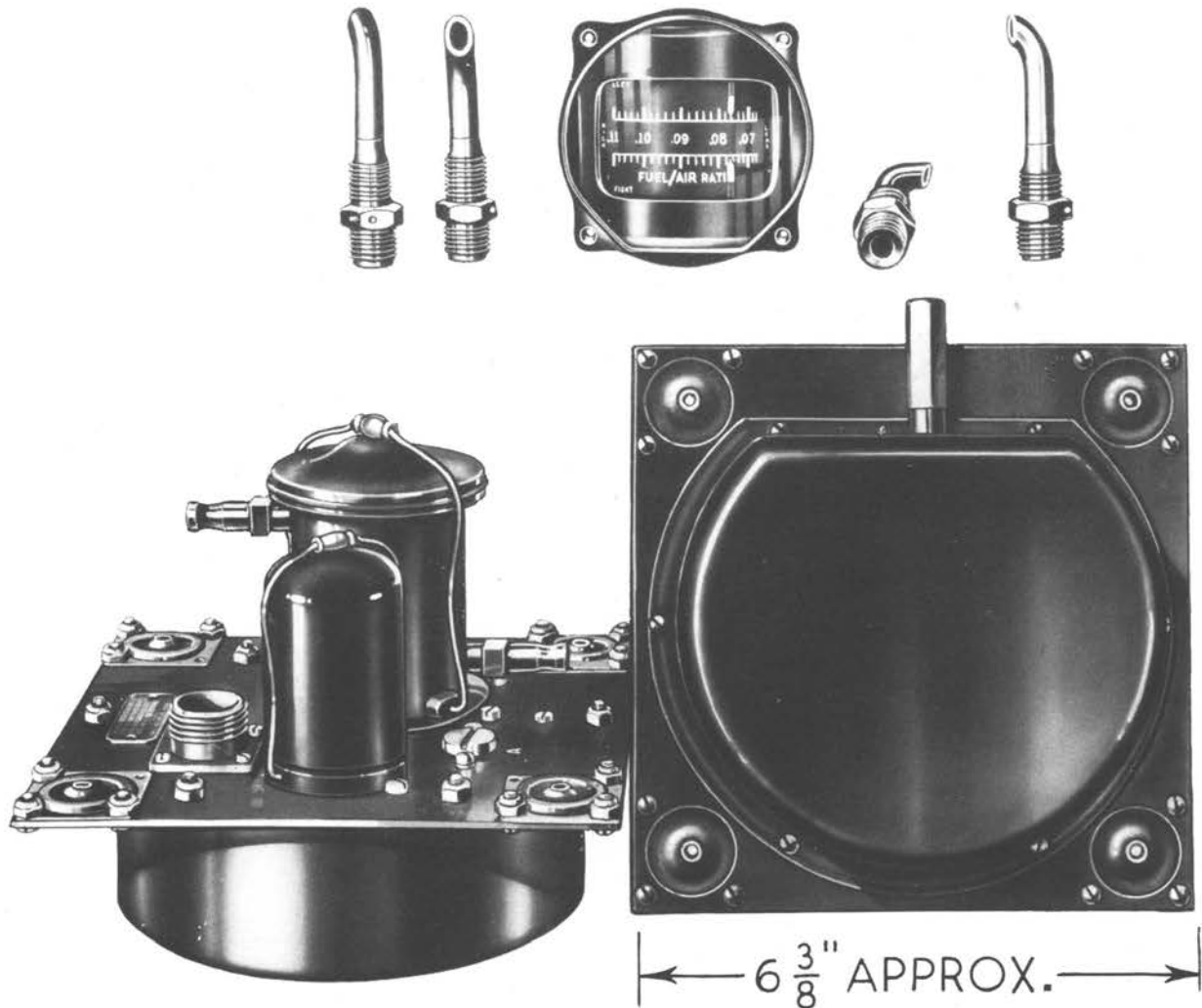
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Charles Engelhard, Inc.	Consisting of: ASSEMBLY 103094	A-B	6100216289-5	05-3C-1	106A/1188 *
	1 indicator H-378		6100216280		106A/1422
	2 analysis cells R-34		6100047270		106A/1444
	4 sampling tubes H-323		6100458550		106AN/46
Cambridge Instrument Co.	Consisting of: ASSEMBLY 11607	A-B	6100216285	05-3AB-1	106A/1453
	1 indicator 11609		6100216287		106A/1454
	2 analysis cells 11627		6100046795		106A/1447
	4 sampling tubes 10219		6100458250		106AH/162
	Consisting of: ASSEMBLY 12656	A-B	6100216289	05-3AB-1	106A/1453
	1 indicator 11609-1		6100216287-5		106A/1455
	2 analysis cells 11627		6100046795		106A/1447
	4 sampling tubes 10219		6100458250		106AH/162

*REMARKS: This assembly is identical with Army Type B-6A indicator assembly made by this manufacturer.



FUEL MIXTURE INDICATORS INSTRUMENTS—ENGINE



INDICATOR ASSEMBLY—FUEL MIXTURE

ARMY TYPE B-6A

NAMES: Fuel mixture indicator assembly
Exhaust gas analyzer
Analyzer—exhaust gas

DESCRIPTION: This assembly consists of a dual indicator, two analysis cells, and four sampling tubes.

CHARACTERISTICS:

Voltage.....	24 volts, direct current
Markings.....	fluorescent material
Dimensions:	
Indicator.....	approximately 3¼ by 3¼ by 4 inches
Analysis cells.....	approximately 6½ by 6½ by 5 inches, each
Sampling tubes.....	approximately 3 inches long
Assembly weight.....	approximately 3½ pounds

RELATIONSHIP OF PARTS: Used with:

Four fuel mixture indicator flanges..... A. E. Reference Number 61-4901.

(Continued on Page 18)



INDICATOR ASSEMBLY—FUEL MIXTURE

(Continued from Page 17)

ARMY

A. E. REFERENCE NUMBER: 61-5060

SPECIFICATIONS:

General 94-27844-C.
Detail 94-27933-B.
Superseded 94-27933-C.

TYPE DESIGNATION: B-6A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

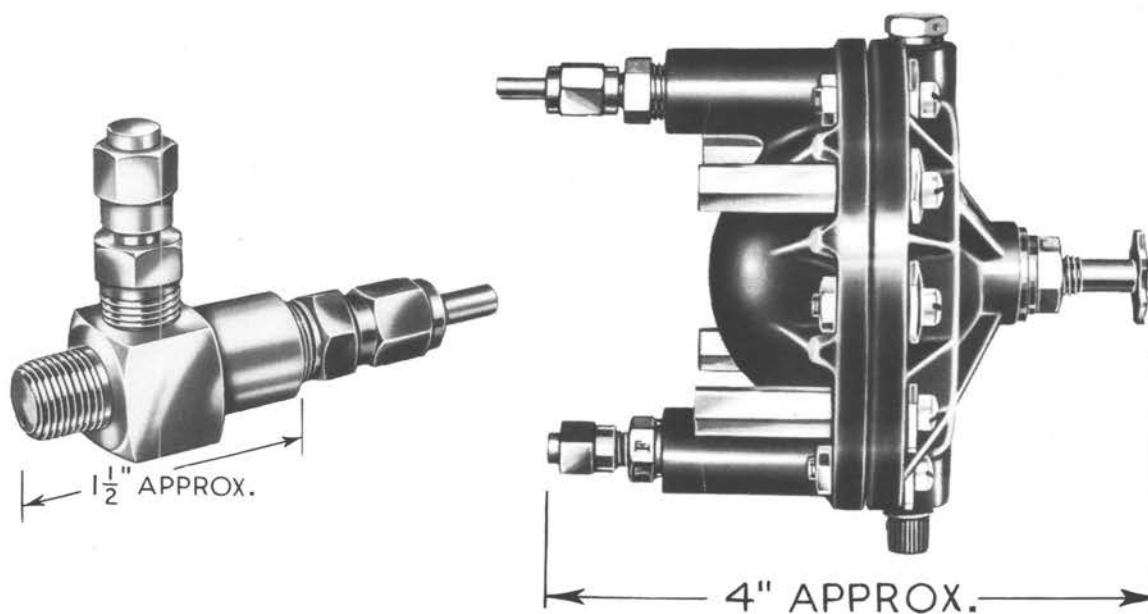
SHIPPING DATA: Shipped as a complete unit, including an indicator, two analysis cells and four sampling tubes.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Cambridge Instrument Co.	Consisting of: ASSEMBLY 13082	A-B	6100216295	05-3AB-1	106A/1423
	1 indicator 13078		6100216300		106A/1456
	2 analysis cells 13079		6100047280		106A/1452
	4 sampling tubes 10219		6100458250		106AH/162
	Consisting of: ASSEMBLY 13552	A-B			106A/1423
	1 indicator 13500				106A/1457
	2 analysis cells 13079		6100047280		106A/1452
	4 sampling tubes 10219		6100458250		106AH/162
Charles Engelhard, Inc.	Consisting of: ASSEMBLY 103094	A-B	6100216289-5	05-3C-1	106A/1188
	1 indicator H-378		6100216280		106A/1422
	2 analysis cells R-34		6100047270		106A/1444
	4 sampling tubes H-323		6100458550		106AN/46



TRANSMITTER ASSEMBLY—FUEL OR OIL PRESSURE

AN5765-1 FORMER ARMY TYPE A-1

NAMES: Fuel or oil pressure transmitter assembly
Pressure transmission system

Transmitter—fuel or oil

DESCRIPTION: The type AN5765-1 fuel or oil pressure transmitter, superseding the Army type A-1 hydraulic pressure transmission system, is used in aircraft fuel or oil systems for measuring and indicating pressures, providing remote indication on the instrument panel. The transmitter has a bowl, separated into two chambers by a diaphragm of corrugated, synthetic rubber material which is not affected by the action of oil or fuel.

One chamber is connected directly to the oil or fuel pressure source, and the other is part of a closed system which is connected to the indicating gage. The entire system, including the chamber, gage and connecting lines, is filled with compass liquid.

Changes in the pressure of the fuel or oil system change the position of the diaphragm, thereby transmitting the pressure in the fuel or oil system to the liquid in the sealed system. Changes in pressure are transmitted through the compass liquid to the gage and are indicated on the dial.

The pressure transmitter is installed close to the source of pressure to be measured. It is usually mounted in front of the engine firewall, in an area where the temperature does not exceed 125 degrees centigrade.

Use of this transmitter eliminates the necessity for running fuel and oil lines into the cockpit, and insures operation of gages without the time lag which might be caused by oil congealing in long lines.

CHARACTERISTICS:

Transmitter part number.....	AN5765-2
Range.....	0 to 600 pounds per square inch
Pressure connections.....	2 each $\frac{1}{8}$ inch pipe thread
Weight.....	approximately $1\frac{1}{4}$ pounds
Dimensions.....	approximately $3\frac{3}{16}$ by $1\frac{1}{2}$ by 4 inches
Gage fitting.....	part number AN5765-3
Gage fitting weight.....	approximately 3 ounces
Gage fitting dimensions.....	approximately $1\frac{5}{32}$ inches by $2\frac{1}{2}$ by $\frac{3}{4}$ inch

(Continued on Page 20)



TRANSMITTER ASSEMBLY—FUEL OR OIL PRESSURE

(Continued from Page 19)

ARMY

A. E. REFERENCE NUMBER: 61-2327

SPECIFICATIONS:

Detail AN-T-36
Superseded 27383-A

AN OR A. A. F. DRAWING NUMBER: AN5765

AN PART NUMBER: AN5765-1 (assembly); AN5765-2 (transmitter); AN5765-3 (gage fitting)

TYPE DESIGNATION: Former type A-1

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including transmitter and gage fitting. Dimensions of carton approximately 3½ by 3½ by 5⅝ inches. Gross weight approximately 1 pound 6 ounces.

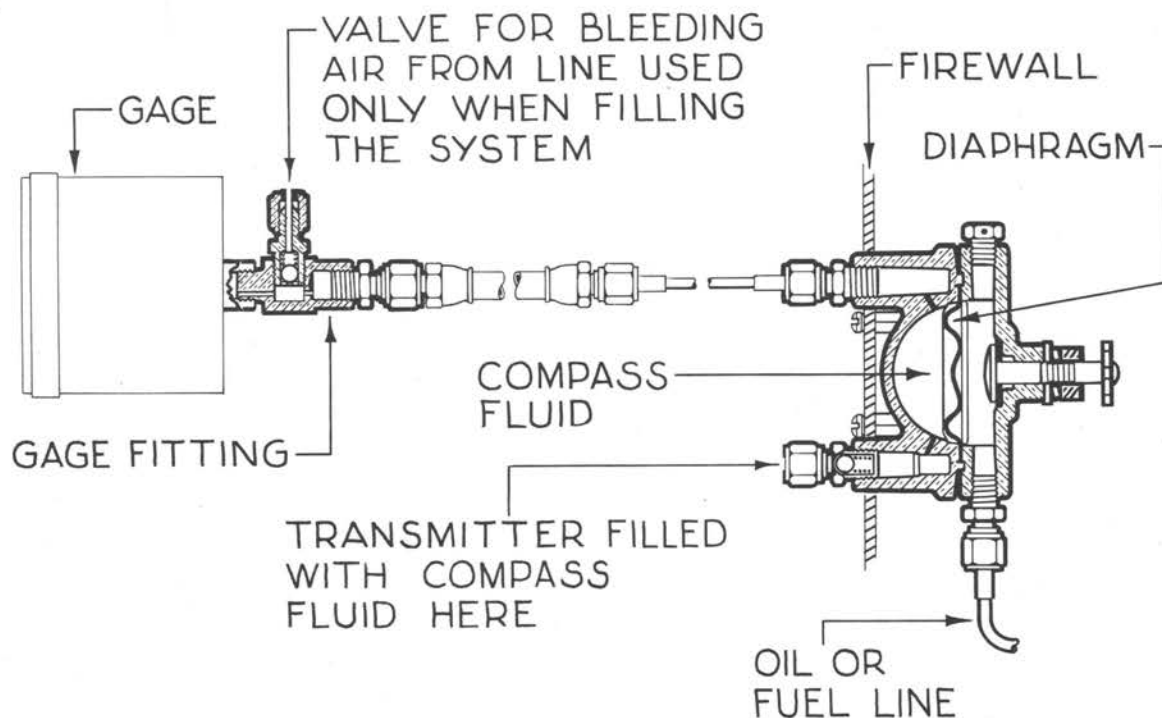
NAVY

TYPE DESIGNATION: AN5765-2

SPECIFICATIONS:

Detail AN-T-36

PROCUREMENT STATUS: Not yet under procurement for initial installation.



ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
King-Seeley Corp.	32600	A-N-B	6100427075	AN05-70-4	106A/1351
Minneapolis Honeywell Regulator Co.	G1000 A4 CA1	A-B		AN05-70-4	106A/1351
	G1000 A2 CA1	A-N-B	6100427675	AN05-70-4	106A/1351
Rochester Manufacturing Co.	2150	A-N-B	6100427070	AN05-70-4	106A/1351



PRESSURE GAGES

These pressure instruments depend upon either the Bourdon tube or the diaphragm principle for their operation. The Bourdon tube, which is the type most commonly used, is a hollow curved metal tube. One end remains fixed to the instrument case, and the other end, which is sealed, is connected at the tip to the pointer on the dial of a gage by a linkage system.

The pressure of a gas or liquid entering the Bourdon tube tends to straighten the curve. Reduction of the pressure restores the tube to its original curved position. This movement of the tube is communicated to a calibrated scale on the gage, and is read in "pounds per square inch."

The Army-Navy standard, AN5771 and AN5772 has been set up for the following gages:

AN Number	Function of Gage
AN5771-1	Fuel pressure
AN5771-2	Oil pressure
AN5771-3	De-icing pressure
AN5771-4	Hydraulic pressure
AN5771-6	Automatic pilot oil pressure
AN5772-1	Dual Fuel Pressure
AN5772-2	Dual Oil Pressure

ENGINE OIL AND AUTOMATIC PILOT OIL PRESSURE GAGES

Oil pressure gages are designed to withstand a pressure 50 percent to 200 percent greater than that which appears on the dial. This characteristic is referred to as the overpressure rating. A gage with a high overpressure rating may replace one with a lower range, but the reverse should not be attempted unless the overpressure requirements may be disregarded.

Engine oil gages indicate the pressure at which oil circulates through the lubrication system, and give an indication of the failure of any of the component units, which might be caused by defect or gunfire.

The oil gage which indicates lubricating oil pressure can also be used to measure and record the pressure of the hydraulic fluid in the servo system of the automatic pilot. However, when the instrument is used for this purpose, it is necessary to install an identification plate above the instrument on the panel.

FUEL PRESSURE GAGES

These gages measure the pressure differential between the fuel and air entering the carburetor intake. The fuel line is connected to the gage by tubing. Another inlet in the rear of the instru-

(Continued on Page 22)



PRESSURE GAGES

(Continued from Page 21)

ment admits air to the interior of the sealed instrument case. The difference in pressure between the air in the case and the fuel is indicated to the pointer of the gage.

Fuel gages indicating pressure on engines having internal superchargers do not require an air line from the carburetor. The air inlet is left open and the air pressure in the case is equal to the pressure in the cabin or cockpit.

HYDRAULIC PRESSURE GAGES

Hydraulic pressure gages indicate the pressure of the fluid used to operate the landing gear, wing flaps, bomb doors and other hydraulically operated equipment.

The face of the indicator was originally marked "Landing Gear," and another type was designated "Hydraulic Pressure." The current AN gage has "Pressure Pounds Per Square Inch" printed on the dial. Despite these variations in names, all the types serve the same purpose and can be installed to record pressure anywhere in the hydraulic system that an indication is required.

DE-ICING PRESSURE GAGES

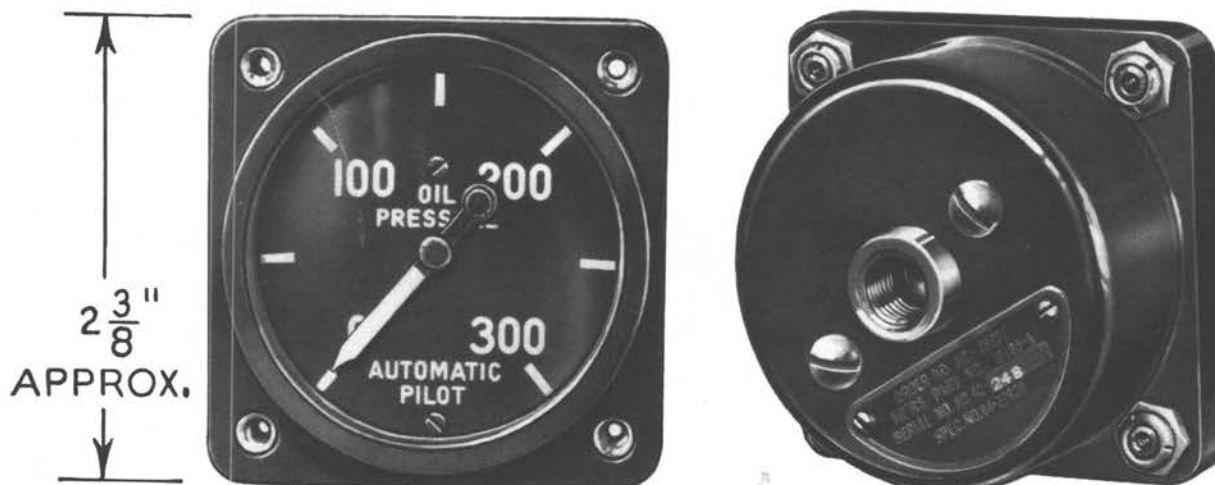
This gage indicates the pressure of the compressed air supplied by the air pump for the operation of the de-icer boots.

All of the foregoing instruments are the direct reading type.

AUTOSYN PRESSURE GAGES

Oil and fuel pressure gages of the remote indicating electrical type (autosyn) are also used. The principle of their operation is described on page 4.

Autosyn indicators are, generally, larger than, and not interchangeable with, direct reading gages. The mounting dimensions, however, are the same size. Complete substitution of assemblies (indicator and transmitter or lead) can be made where necessary, and where installation space permits.

**GAGE—AUTOMATIC PILOT OIL PRESSURE****AN5771-6 FORMER ARMY TYPE H-2 F. S. S. C. NUMBER 88-G-875**

NAMES: Automatic pilot oil pressure gage
Automatic pilot gage

Gage assembly—oil pressure

DESCRIPTION: This is a single, direct reading gage, in which the sensitive mechanism is the Bourdon tube. It indicates the pressure of the hydraulic fluid in the servo system of the automatic pilot.

CHARACTERISTICS:

Range.....	0 to 300 pounds per square inch
Over pressure.....	none
Pressure connection.....	1/8 inch pipe thread
Weight.....	approximately 7 ounces
Dial size.....	1 7/8 inches
Depth.....	approximately 1 1/2 inches
Markings.....	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 60-3120
SPECIFICATIONS:

Detail.....94-27920A
Superseded.....94-27920

AN DRAWING NUMBER: AN5771

AN PART NUMBER: AN5771-6, former Army type H-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: H-2 now under procurement. AN5771-6 not under procurement for initial installation. Will be purchased when supply of H-2 gages is exhausted.

SHIPPING DATA: Dimensions approximately 3 3/4 by 3 3/4 by 2 3/4 inches. Gross weight approximately 1/2 pound.

NAVY

TYPE DESIGNATION: AN5771-6

SPECIFICATIONS:

Detail.....AN-G-2a
Superseded.....AN-G-2

AN DRAWING NUMBER: AN5771

F. S. S. C. NUMBER: 88-G-875

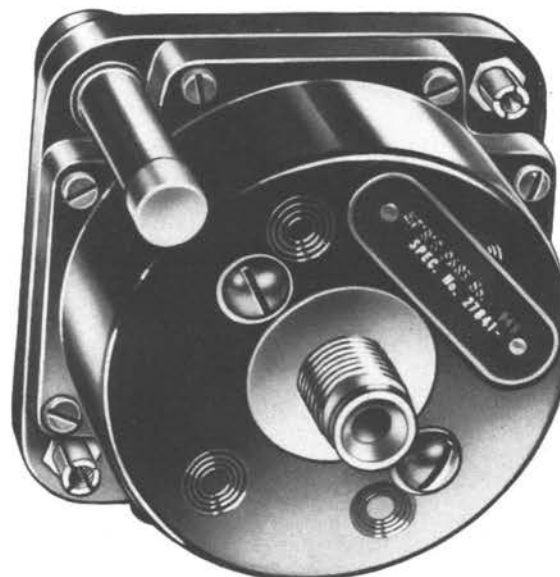
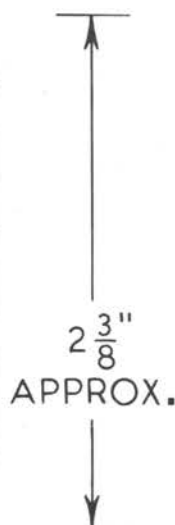
PROCUREMENT STATUS: Procurement initiated.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
The Electric Auto-Lite Co.	10231-A	A-B	6000107509	05-70-2	106J/660
	9753-A	A-B	6000107505	05-70-2	106J/660
	10185-A	A-B	6000107508	05-70-2	106J/660
Manning, Maxwell & Moore, Inc.	6719-94	A-B	6000107504	05-70-2	106J/660
	6713-04	B-C			106J/660
United States Gauge Co.	AW-1 7/8-6-A	A-B	6000107503-5	05-70-2	106J/660
	AW-1 7/8-14-CK	A-B	6000107503	05-70-2	106J/660



PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—DE-ICING PRESSURE

ARMY TYPE G-1

NAMES: De-icing pressure gage

Gage assembly—de-icing pressure

DESCRIPTION: This is a single, direct reading gage, in which the sensitive element is the Bourdon tube. It indicates the air pressure in the de-icing system.

CHARACTERISTICS:

Range.....	0 to 20 pounds per square inch
Dial size.....	approximately 1 7/8 inches
Depth.....	approximately 1 11/16 inches
Pressure connection.....	1/8 inch pipe thread
Lighting.....	individual, one wire, 3 volt
Markings.....	radioactive material
Weight.....	approximately 7 ounces

ARMY

A. E. REFERENCE NUMBER: 60-2400

SPECIFICATIONS:

Detail.....94-27841

TYPE DESIGNATION: G-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type G-2, AN5771-3.

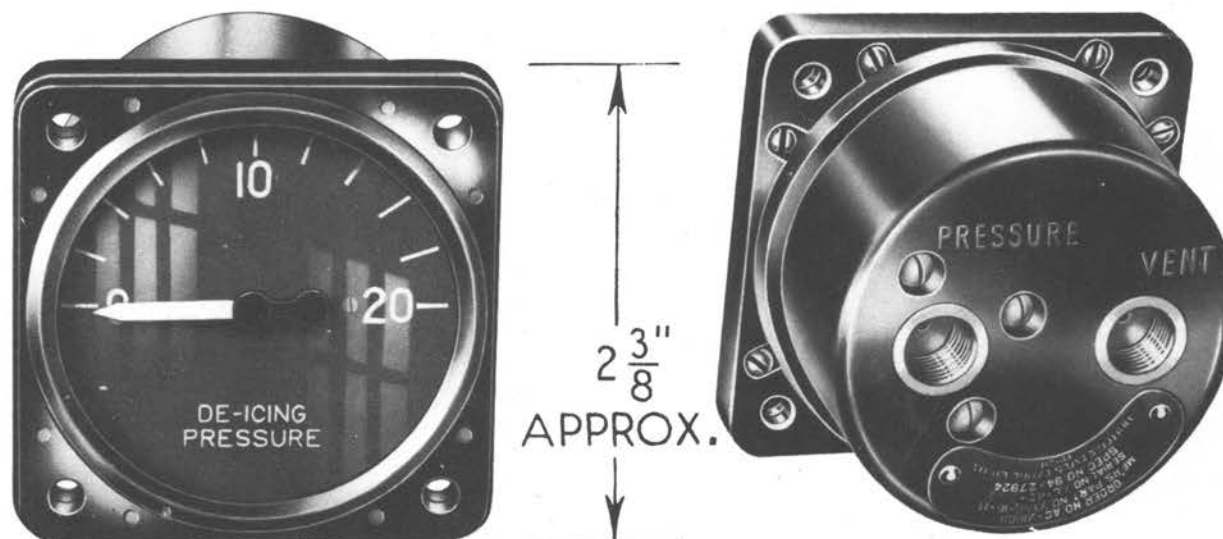
SHIPPING DATA: Shipped as a complete unit. Dimensions of carton approximately 3 3/4 by 3 3/4 by 2 3/4 inches. Gross weight approximately 1/2 pound.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
United States Gauge Co.	AW2-43	A-B	6000109500	05-70-2	106A/420
Manning, Maxwell & Moore, Inc.	N948	A-B	6000109750	05-70-2	106A/420

**GAGE—DE-ICING PRESSURE****AN5771-3 FORMER ARMY TYPE G-2 F. S. S. C. NUMBER 88-G-375**

NAMES: De-icing pressure gage

Gage assembly—de-icing pressure

DESCRIPTION: Single, direct reading gage, in which the sensitive element is the Bourdon tube. It indicates the air pressure in the de-icing system.

CHARACTERISTICS:

Weight.....approximately 7 ounces
 Dial size.....approximately $1\frac{7}{8}$ inches
 Depth.....approximately $1\frac{1}{2}$ inches
 Range.....0 to 20 pounds per square inch
 Pressure connection.....Two— $\frac{1}{8}$ inch pipe thread
 Markings.....fluorescent material

ARMY

A. E. REFERENCE NUMBER: 60-2600

SPECIFICATIONS:

Detail.....AN-G-2a
 Superseded.....AN-G-2; 94-27924-A; 94-27924

AN PART NUMBER: AN5771-3 (former Army type G-2)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army type G-2, G-1.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....approximately $3\frac{3}{4}$ by $3\frac{3}{4}$ by $2\frac{3}{4}$ inches
 Gross weight.....approximately $\frac{1}{2}$ pound

NAVY

SPECIFICATIONS:

Detail.....AN-G-2a
 Superseded.....AN-G-2

AN DRAWING NUMBER: AN5771

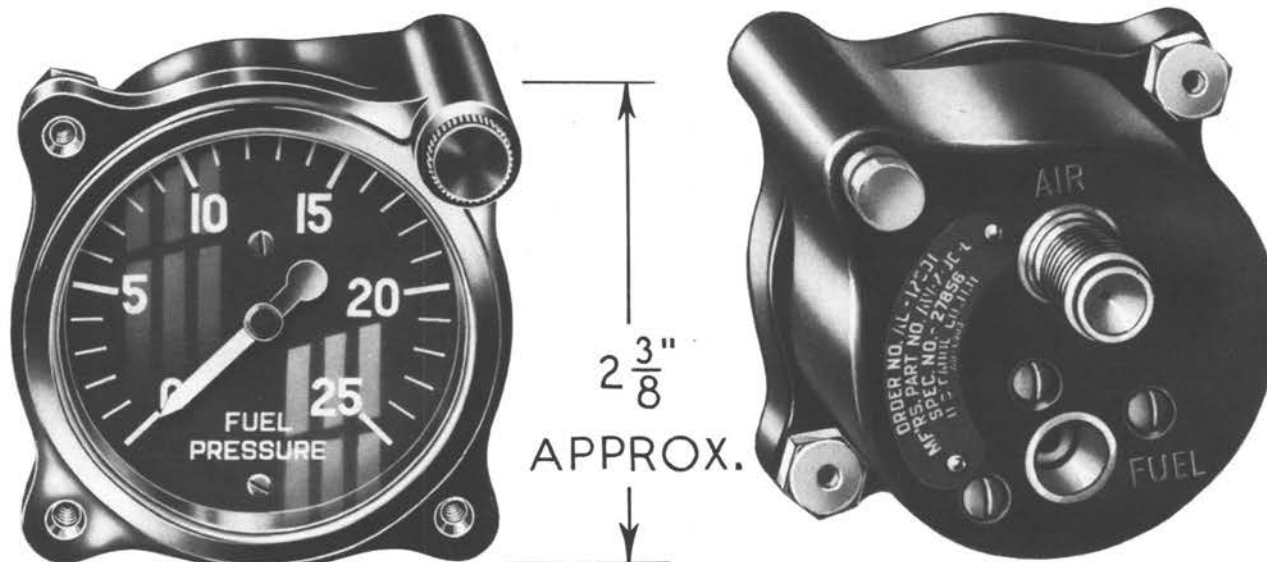
AN PART NUMBER: AN5771-3

F. S. S. C. STOCK NUMBER: 88-G-375

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
United States Gauge Co.	AW-1 $\frac{7}{8}$ -16-AC	A-B	6000110012	05-70-2	106A/1068
	AW-1 $\frac{7}{8}$ -16-N	A-B	6000110015	05-70-2	106A/1068
Manning, Maxwell & Moore, Inc.	6753-109	A-B	6000110019	05-70-2	106A/1068
	G75055	N-B			106A/1068
Northern Engraving & Mfg. Co.	D-117	N			



GAGE—FUEL PRESSURE

ARMY TYPE C-10

NAMES: Fuel pressure gage
Gage assembly—fuel pressure

Gage—pressure—fuel

DESCRIPTION: Single, direct reading gage, in which the sensitive mechanism is the Bourdon tube. It is used to indicate fuel pressure.

CHARACTERISTICS:

Weight.....	approximately 7 ounces
Dial size.....	approximately 1 $\frac{7}{8}$ inches
Depth.....	approximately 1 $\frac{1}{16}$ inches
Range.....	0 to 25 pounds per square inch
Pressure connection, fuel and vent.....	$\frac{1}{8}$ inch pipe thread
Lighting.....	individual—one wire, three volts
Markings.....	radioactive material

ARMY

A. E. REFERENCE NUMBER: 61-2150

SPECIFICATIONS:

Detail.....	94-27856A
Superseded.....	94-27856

TYPE DESIGNATION: C-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....	approximately 3 $\frac{3}{4}$ by 3 $\frac{3}{4}$ by 2 $\frac{3}{4}$ inches
Gross weight.....	approximately 9 ounces

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
United States Gauge Co.	AW2-36A	A-B	6100118500	05-70-2	106A/76
	AW2-36C	A-B	6100118750	05-70-2	106A/76
	AW2-36E	C-B			106A/76
	AW-1 $\frac{7}{8}$ -15-K	C-B			106A/76

PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—FUEL PRESSURE

AN5771-1 FORMER ARMY TYPE C-13 F. S. S. C. NUMBER 88-G-518

NAMES: Fuel pressure gage
Gage assembly—fuel pressure (single)

Gage—pressure—fuel

DESCRIPTION: This is a single, direct reading gage, in which the sensitive element is the Bourdon tube. It is used to indicate fuel pressure.

CHARACTERISTICS:

Weight.....	approximately 7 ounces
Dial size.....	approximately 1 7/8 inches
Depth.....	approximately 1 1/2 inches
Range.....	0 to 25 pounds per square inch
Pressure connection, fuel and vent.....	1/8 inch pipe thread
Markings.....	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 61-2300

SPECIFICATIONS:

Detail.....AN-G-2a
Superseded.....AN-G-2; 94-27919A

AN DRAWING NUMBER: AN5771

AN PART NUMBER: AN5771-1 (former
Army type C-13)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to
chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton: approximately 3 3/4
by 3 3/4 by 2 3/4 inches. Gross weight: ap-
proximately 9 ounces.

NAVY

SPECIFICATIONS:

Detail.....AN-G-2a
Superseded.....SQ-94

AN DRAWING NUMBER: AN5771

AN PART NUMBER: AN5771-1

F. S. S. C. STOCK NUMBER: 88-G-518

PROCUREMENT STATUS: Standard. G. F. E.

—Order through A. S. O. by F. S. S. C.
number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
The Electric Auto-Life Co.	10232-A	A-B	6100113950	05-70-2	106A/69
	10098-A	A-B	6100119268	05-70-2	106A/69
United States Gauge Co.	AW-1 7/8-15-BP	A-B	6100119263	05-70-2	106A/69
	AW-1 7/8-2	B			106A/69
	AW-1 7/8-15-AX	B			106A/69
	AW-1 7/8-15-BG	C-B			106A/69
Manning, Maxwell & Moore, Inc.	6754-110	A-B	6100119265	05-70-2	106A/69
Northern Engraving & Mfg. Co.	D-115	N			

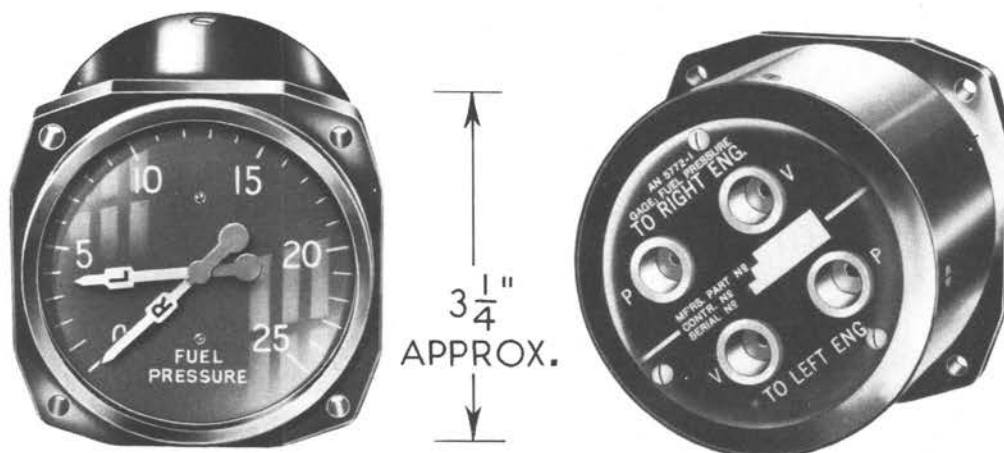
TYPE INTERCHANGEABILITY

Type
AN5772-1

Dual gage. In an emergency it may be used in place of the AN5771-1 by connecting the engine to only one side of the gage.



PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—FUEL PRESSURE (DUAL)

AN 5772-1

F. S. S. C. NUMBER 88-G-480

NAMES: Dual fuel pressure gage
Fuel pressure gage (dual)

Indicator assembly—fuel pressure gage (dual)
Gage—pressure—fuel

DESCRIPTION: This is a dual, direct reading gage, in which the sensitive element is the Bourdon tube. It is used to indicate fuel pressure.

CHARACTERISTICS:

Weight.....	approximately 1 $\frac{1}{8}$ pounds
Dial size.....	2 $\frac{3}{4}$ inches
Depth.....	approximately 3 inches
Range.....	0 to 25 pounds per square inch
Pressure connection, fuel and vent.....	$\frac{1}{8}$ inch pipe thread
Markings.....	fluorescent

ARMY

A. E. REFERENCE NUMBER: 61-2326

SPECIFICATIONS:

Detail.....	AN-G-2a
Superseded.....	AN-G-2

AN DRAWING NUMBER: AN5772

AN PART NUMBER: AN5772-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit. Dimensions of carton: approximately 3 $\frac{3}{4}$ by 4 $\frac{1}{8}$ by 4 $\frac{1}{2}$ inches. Gross weight: approximately 1 $\frac{1}{4}$ pounds.

NAVY

TYPE DESIGNATION: AN5772-1

SPECIFICATIONS:

Detail.....	AN-G-2a
Superseded.....	AN-G-2

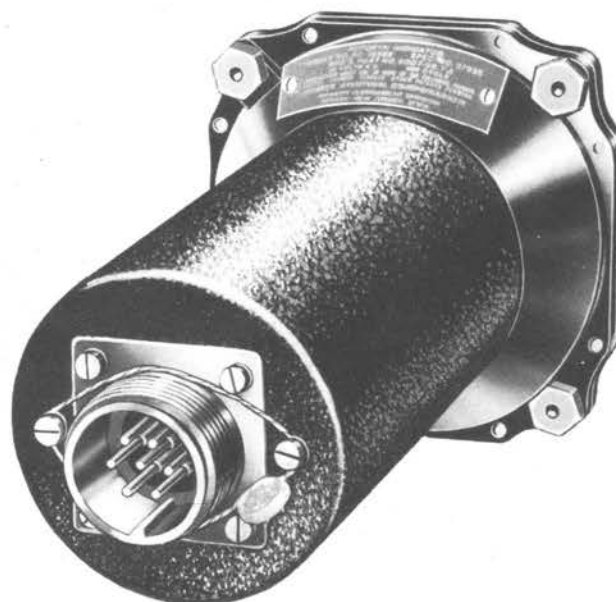
AN DRAWING NUMBER: AN5772

F. S. S. C. STOCK NUMBER: 88-G-480

PROCUREMENT STATUS: Procurement initiated.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Marshalltown Manufacturing Co.	31855	A-B	6100133925	05-70E-2	106A/1335
Ranco, Inc.	31855	A-B	6100133925	05-70E-2	106A/1335
	31833	A-B	6100113900	05-70E-2	106A/1335
American Meter Co., Inc.	M-18217	A-B	6100113886	05-70E-2	106A/1335
	M-18314	A-B	6100113890	05-70E-2	106A/1335
F. E. Olds	31855	A-B	6100133925	05-70E-2	106A/1335
United States Gauge Co.	AW-2 $\frac{3}{4}$ -40-A	A-B	6100113882	05-70E-2	106A/1335



INDICATOR—FUEL PRESSURE

ARMY TYPE C-14

NAMES: Autosyn fuel pressure indicator
Fuel pressure autosyn indicator

Indicator assembly—fuel pressure gage (dual)
Indicator—fuel pressure—electric—dual type (Navy)

DESCRIPTION: This is a dual indicator of the autosyn type, which receives its indications of fuel pressure from two transmitters located at the carburetor intake of the aircraft engines.

CHARACTERISTICS:

Weight.....	approximately 1 1/4 pounds
Dial size.....	approximately 2 3/4 inches
Depth.....	approximately 5 3/4 inches
Range.....	0 to 20 pounds per square inch
Electrical plug.....	AN3106-16S-1S
Markings.....	fluorescent material

RELATIONSHIP OF PARTS: Used with: C-14 transmitter, A. E. Reference Number 61-2352.

ARMY

A. E. REFERENCE NUMBER: 61-2351

SPECIFICATIONS:

Detail.....	94-27935-A
Superseded.....	94-27935

TYPE DESIGNATION: C-14

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

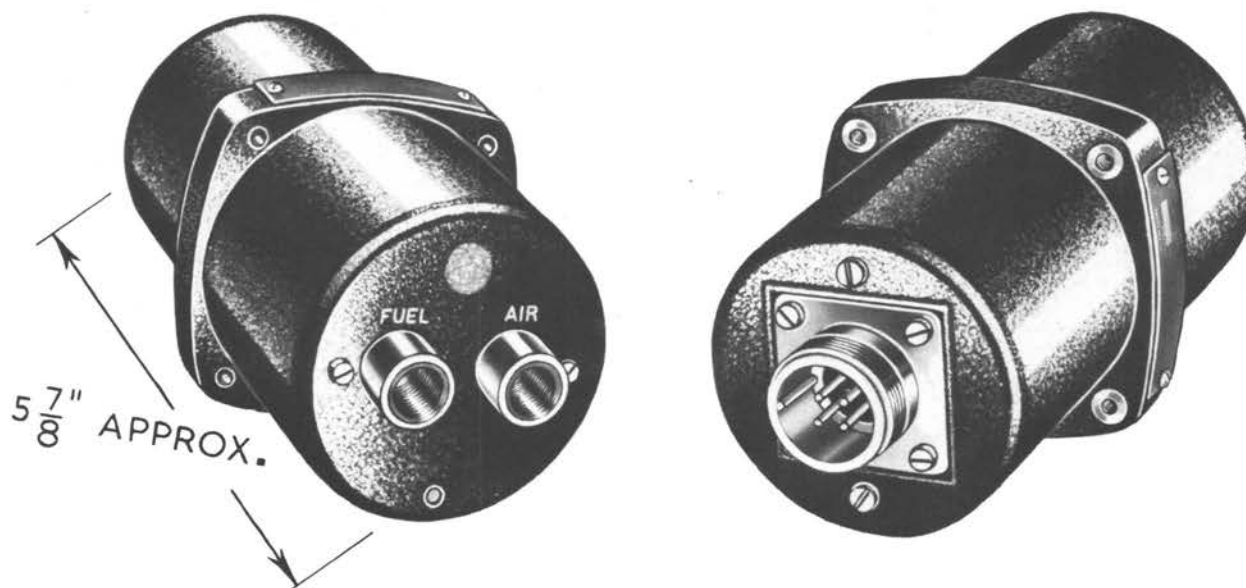
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	6007-9B-7-A	A-B	6100217620	05-55B-1	106A/783
	6007-9C-7-A	B-C			106A/783



TRANSMITTER—FUEL PRESSURE

ARMY TYPE C-14

NAMES: Autosyn fuel pressure transmitter

Transmitter—fuel pressure—electric type (Navy)

Fuel pressure transmitter—electrical

Transmitter fuel pressure gage

DESCRIPTION: Autosyn gage, used to transmit the recorded fuel pressure at the carburetor intake to an indicator located on the instrument panel.

CHARACTERISTICS:

Weight.....	approximately 1 pound
Depth.....	approximately 5 7/8 inches
Pressure connection.....	(two) 1/8 inch pipe thread
Electrical plug.....	AN3106-14S-2S

RELATIONSHIP OF PARTS: Used only with Army type indicator C-14, A. E. Reference Number 61-2351

ARMY

A. E. REFERENCE NUMBER: 61-2352

SPECIFICATIONS:

Detail.....	94-27935-A
Superseded.....	94-27935

TYPE DESIGNATION: C-14

MANUFACTURER'S DESIGNATION: Pioneer Instrument Division part and drawing number 4050-3-A3

A. S. C. STOCK NUMBER: 6100429515

TECHNICAL ORDER NUMBER: 05-55B-1

PRODUCTION STATUS: Under procurement.

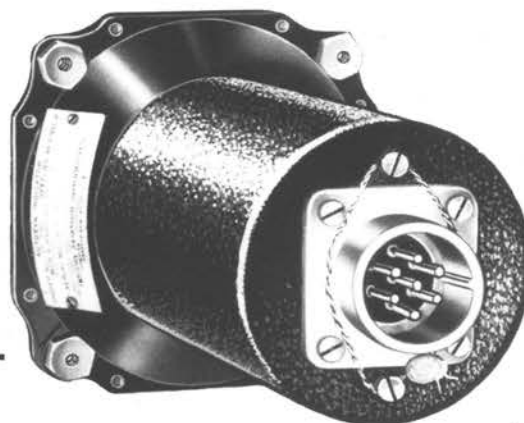
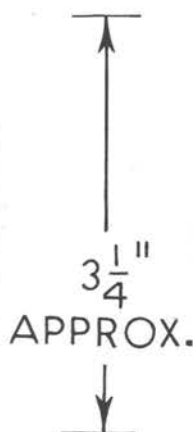
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1173



INDICATOR—FUEL PRESSURE

ARMY TYPE C-14A F. S. S. C. NUMBER 88-I-1220

NAMES: Autosyn fuel pressure indicator
Fuel pressure autosyn indicator

Indicator assembly—fuel pressure gage (dual)
Indicator—fuel pressure—electric—dual type (Navy)

DESCRIPTION: This is a dual indicator of the autosyn type, which receives its indications of fuel pressure from two transmitters located at the carburetor intake of the aircraft engines.

CHARACTERISTICS:

Weight.....	approximately 1 1/4 pounds
Dial size.....	approximately 2 3/4 inches
Depth.....	approximately 5 3/4 inches
Range.....	0 to 25 pounds per square inch
Electrical plug.....	AN3106-16S-1S
Markings.....	fluorescent material

RELATIONSHIP OF PARTS: Used with Army type C-14A transmitter, A. E. Reference Number 61-2377.

ARMY

A. E. REFERENCE NUMBER: 61-2376

SPECIFICATIONS:

Detail..... 94-27935-B
Superseded..... 94-27935-A; 94-27935

TYPE DESIGNATION: C-14A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS

Detail..... SQ-106

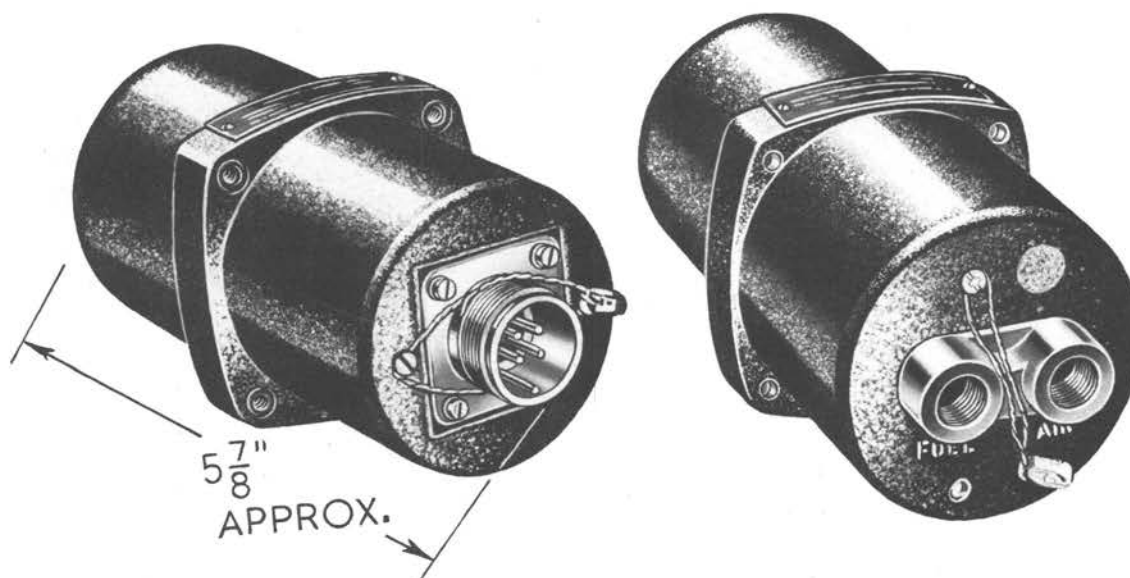
Superseded..... SE-16

F. S. S. C. NUMBER: 88-I-1220

PROCUREMENT STATUS: Standard. G. F. E.
—Order through A. S. O. by F. S. S. C.
number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Pioneer Instrument Division	6007-14E-7-A	A-N-B	6100217680	05-55B-1	106A/1352	Pointers finished in radium luminous material.
	6007-14E-14-A	A-N-B		05-55B-1	106A/1352	Pointers finished in fluorescent luminous material.
	6007-14D-7-A	N-B			106A/1352	
	6007-14D-1-B	N-B			106A/1352	
	6007-14B-1-A	B-C			106A/1352	
	6007-14C-6-A	B-C			106A/1352	

**TRANSMITTER—FUEL PRESSURE****ARMY TYPE C-14A F. S. S. C. NUMBER 88-T-2025**

NAMES: Autosyn fuel pressure transmitter
Transmitter—fuel pressure—electric type (Navy)

Fuel pressure transmitter—electrical
Transmitter fuel pressure gage (dual)

DESCRIPTION: This is an autosyn gage, which transmits the fuel pressure at the carburetor intake to an indicator located on the instrument panel.

CHARACTERISTICS:

Range.....0 to 25 pounds per square inch
Weight.....approximately 1 pound
Depth.....approximately 5 7/8 inches
Pressure connection.....(two) 1/8 inch pipe thread
Electrical plug.....AN3106-14S-2S

RELATIONSHIP OF PARTS:

Used only with Army type C-14A indicator, A. E. Reference Number 61-2376.

ARMY

A. E. REFERENCE NUMBER: 61-2377

SPECIFICATIONS:

Detail.....94-27935-B
Superseded.....94-27935-A, 94-27935

TYPE DESIGNATION: C-14A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: C-14A

SPECIFICATIONS:

Detail.....94-27935-B
Superseded.....94-27935-A; SE-16

F. S. S. C. STOCK NUMBER: 88-T-2025

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	4050-4-A4	A-N-B	6100429300	05-55B-1	106A/152
	4050-4-B4	A-N-B	6100429530	05-55B-1	106A/152



2 $\frac{3}{8}$ "
APPROX.



GAGE—HYDRAULIC PRESSURE—LANDING GEAR

ARMY TYPE E-3

NAMES: Landing gear—hydraulic pressure gage

Gage assembly—hydraulic pressure—landing gear

Gage—pressure—landing gear

Hydraulic pressure gage—landing gear

Gage—hydraulic pressure—alighting gear

DESCRIPTION: Single, direct reading gage, in which the sensitive element is the Bourdon tube. The face of the dial has "Landing Gear" printed on it, but the gage can be used to indicate pressures any place in the hydraulic system.

CHARACTERISTICS:

Range.....	0 to 2000 pounds per square inch
Pressure connection.....	cone union
Weight.....	approximately $\frac{1}{2}$ pound
Dial size.....	approximately $1\frac{1}{8}$ inches
Depth.....	approximately 2 inches
Lighting.....	individual, one wire, 3 volt
Markings.....	radioactive material

ARMY

A. E. REFERENCE NUMBER: 60-2800

SPECIFICATIONS:

Detail..... 94-27812B

Superseded..... 94-27812A

TYPE DESIGNATION: E-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by types E-4 and AN5771-4.

SHIPPING DATA: Shipped as a complete unit. Dimensions of carton: approximately $3\frac{3}{4}$ by $3\frac{3}{4}$ by $2\frac{3}{4}$ inches. Gross weight: approximately $\frac{1}{2}$ pound.

NAVY

TYPE DESIGNATION: There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE

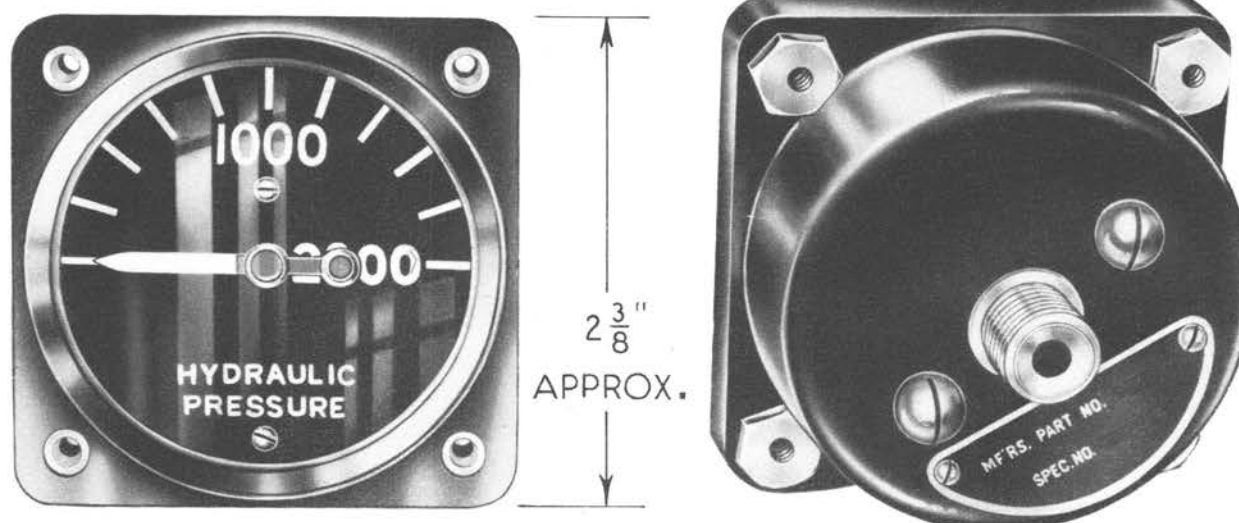
Models are used in services as noted in column 3

A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Manning, Maxwell & Moore, Inc.	N-943-CC	A-B	6000122490	05-70-2	106A/81	Does not use resistor for rim lighting.
	N-943-F	A-B	6000122500	05-70-2	106A/81	Does not use resistor for rim lighting.
United States Gauge Co.	AW-2-34-C	A-B	6000122275	05-70-2	106A/81	
	AW-2-34	A-B	6000122000	05-70-2	106A/81	
	AW-2-34-A	A-B	6000122250	05-70-2	106A/81	
	AW-1 $\frac{7}{8}$ -17-E	C-B			106A/81	
	AW-1 $\frac{7}{8}$ -17-H	C-B			106A/81	
	AW-1 $\frac{7}{8}$ -17-BS	C-B			106A/81	
	AW-2-34-D	C-B			106A/81	



PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—HYDRAULIC PRESSURE—LANDING GEAR ARMY TYPE E-4

NAMES: Landing gear—hydraulic pressure gage Hydraulic pressure gage—landing gear
Gage assembly—hydraulic pressure—landing gear Gage—pressure—landing gear
Gage—hydraulic pressure—alighting gear

DESCRIPTION: Single, direct reading gage, in which the sensitive element is the Bourdon tube. The face of the dial has "Hydraulic Pressure" printed on it. The gage indicates pressures in the hydraulic system.

CHARACTERISTICS:

Range.....	0 to 2000 pounds per square inch
Pressure connection.....	cone union, 1/8 inch male connector
Weight.....	approximately 1/2 pound
Dial size.....	approximately 1 7/8 inches
Depth.....	approximately 2 inches
Markings.....	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 60-3000

SPECIFICATIONS:

Detail.....	94-27922-A
Superseded.....	94-27922

TYPE DESIGNATION: E-4

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit. Dimensions of carton: approximately 3 3/4 by 3 3/4 by 2 3/4 inches. Gross weight: approximately 1/2 pound.

NAVY

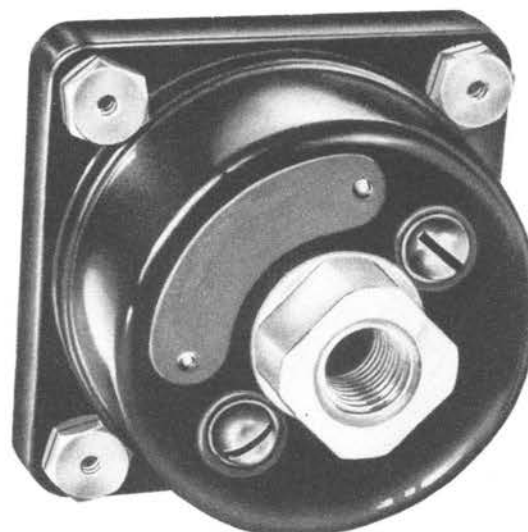
TYPE DESIGNATION: There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
The Electric Auto-Lite Co.	10058-A	A-B	6000122775	05-70-2	106A/1069
	9752-A	A-B	6000119375	05-70-2	106A/1069
Manning, Maxwell & Moore, Inc.	6732-200	B-C			106A/1069
	6732-02	B-C			106A/1069
	6732-03	B-C			106A/1069
United States Gauge Co.	AW-17/8-17-CD	A-B	6000119374	05-07-2	106A/1069
	AW-17/8-17-AK	B-C		05-70-2	106A/1069

TYPE INTERCHANGEABILITY

AN5771-4 has 1/4 inch female connection, Fitting AN815 makes the type E-4 interchangeable with the AN5771-4.

**GAGE—HYDRAULIC PRESSURE—LANDING GEAR****AN5771-4****F. S. S. C. NUMBER 88-G-620**

NAMES: Landing gear—hydraulic pressure gage

Gage assembly—hydraulic pressure—landing gear

Gage—hydraulic pressure—alighting gear

Gage—pressure—landing gear

Hydraulic pressure gage—landing gear

DESCRIPTION: Single, direct reading gage, in which the sensitive element is the Bourdon tube. The face of the dial has "Pounds per Square Inch" printed on it. The gage indicates pressures in the hydraulic system.

CHARACTERISTICS:

Range.....0 to 2000 pounds per square inch
 Pressure connection.....straight female thread, AND10050, for 1/4 inch tubing
 Weight.....approximately 1/2 pound
 Dial size.....approximately 1 7/8 inches
 Depth.....approximately 2 inches
 Markings.....fluorescent material

ARMY A. E. REFERENCE NUMBER: 60-3020

SPECIFICATIONS:

Detail.....AN-G-2a
 Superseded.....AN-G-2; 94-27922-A

AN DRAWING NUMBER: AN5771

AN PART NUMBER: AN5771-4

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....approximately 3 3/4 by 3 3/4 by 2 3/4 inches
 Gross weight.....approximately 1/2 pound

NAVY

SPECIFICATIONS:

Detail.....AN-G-2a
 Superseded.....AN-G-2

AN DRAWING NUMBER: AN5771

AN PART NUMBER: AN5771-4

F. S. S. C. STOCK NUMBER: 88-G-620

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

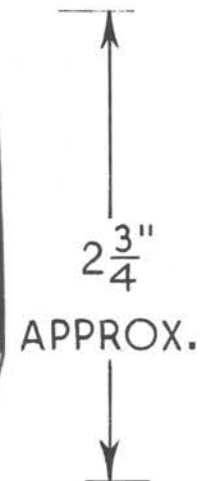
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
The Electric Auto-Lite Co.	10230-A	A-B	6000119815	05-70-2	106A/1333
United States Gauge Co.	AW-17/8-17-CN	A-B	6000119250	05-70-2	106A/1333
Northern Engraving & Mfg. Co.	D-118	N			

TYPE INTERCHANGEABILITY:

Army type E-4 has an internal 1/4 inch straight thread connection. Parker fitting number 3156-7T makes the AN5771-4 interchangeable with the type E-4.

PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—OIL PRESSURE (DUAL)

AN5772-2 FORMER ARMY TYPE B-10

NAMES: Dual oil pressure gage

Gage—pressure—oil (Navy)

Indicator assembly—oil pressure gage (dual)

DESCRIPTION: This is a dual, direct reading gage, in which the sensitive mechanism is a Bourdon tube. It indicates oil pressure in the lubrication system of multi-engined airplanes.

CHARACTERISTICS:

Range.....	0 to 200 pounds per square inch
Overpressure.....	600 pounds per square inch
Pressure connection.....	1/8 inch pipe thread
Weight.....	approximately 1 1/4 pounds
Dial size.....	approximately 2 3/4 inches
Depth.....	approximately 3 inches
Markings.....	fluorescent material

RELATIONSHIP OF PARTS: To be used with two transmitters, Army type A-1.

ARMY

A. E. REFERENCE NUMBER: 61-2851

SPECIFICATIONS: Detail.....AN-G-2

AN DRAWING NUMBER: AN5772

TYPE DESIGNATION: AN5772-2 (B-10)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....approximately 3 3/4 by 4 1/8 by 4 1/2 inches

Gross weight.....approximately 1 pound 6 ounces

NAVY

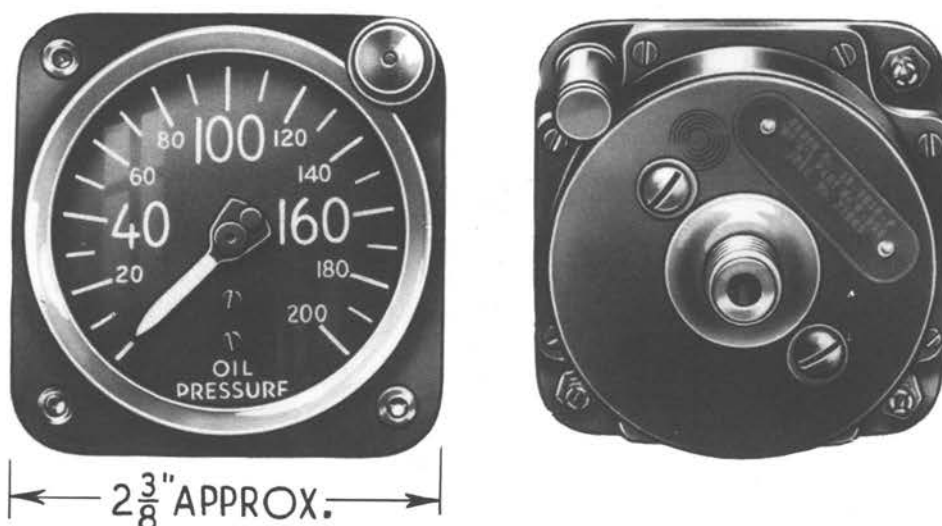
TYPE DESIGNATION: There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Manning, Maxwell & Moore, Inc.	6760-160	A-B		05-70B-1	106A/1336
Fischer Corp.		A-B		05-70B-1	106A/1336
Ranco, Inc.	31848	A-B	6100126548-5	05-70B-1	106A/1336
The Electric Auto-Lite Co.	10226-A	A-B	6100127745-4	05-70B-1	106A/1336



PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—OIL PRESSURE

ARMY TYPE B-5

NAMES: Oil pressure gage

Gage—pressure—oil (Navy)

Gage assembly—oil pressure (single)

DESCRIPTION: This is a single, direct reading gage, in which the sensitive mechanism is the Bourdon tube. It indicates the oil pressure in the lubrication system.

CHARACTERISTICS:

Range.....	0-200 pounds per square inch
Overpressure.....	300 pounds per square inch
Pressure connection.....	cone union
Weight.....	approximately 7 ounces
Dial size.....	approximately 1 7/8 inches
Depth.....	approximately 1 1/2 inches
Lighting.....	individual—one wire, 3 volt
Markings.....	radioactive material

ARMY

A. E. REFERENCE NUMBER: 61-2900

SPECIFICATIONS:

Detail.....	94-27809A
Superseded.....	94-27809

TYPE DESIGNATION: B-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type B-8, B-8A, AN5771-2.

SHIPPING DATA:

Dimensions of carton.....	approximately 3 3/4 by 3 1/4 by 2 3/4 inches
Gross weight.....	approximately 1/2 pound

NAVY

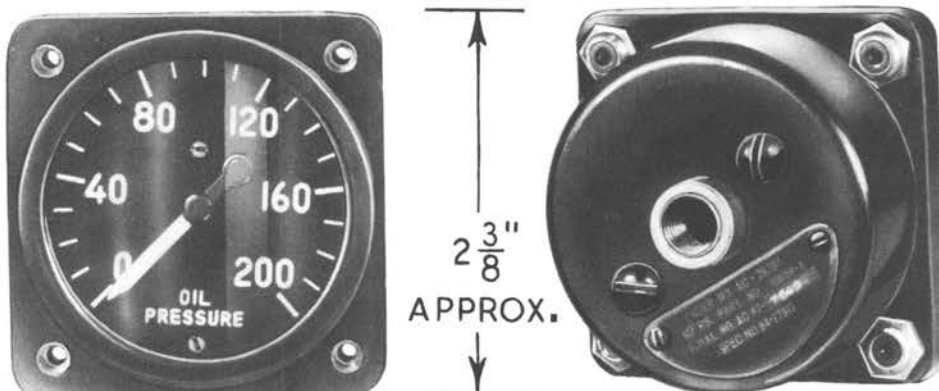
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 **A—Army, N—Navy, B—British, C—Commercial**

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
United States Gauge Co.	AW2-37	B-A	6100131000	05-70-2	106A/75
	AW2-37A	B-C			106A/75
	AW-1 7/8-14-R	B-C			106A/75
	AW-1 7/8-14-W	B-C			106A/75
Manning, Maxwell & Moore, Inc.	N-955	A-B	6100131250	05-70-2	106A/75
	N-955A	A-B	6100131260	05-70-2	106A/75
The Electric Auto-Lite Co.	9756-A	A-B	6100113855	05-70-2	106A/75



PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—OIL PRESSURE

AN5771-2 FORMER ARMY TYPE B-8A F. S. S. C. NUMBER 88-G-855

NAMES: Oil pressure gage

Gage assembly—oil pressure (single)

Gage—pressure oil (Navy)

DESCRIPTION: Single, direct reading gage, in which the sensitive mechanism is the Bourdon tube. It indicates the oil pressure in the lubrication system.

CHARACTERISTICS:

Range.....	0-200 pounds per square inch
Overpressure.....	600 pounds per square inch
Pressure connection.....	1/8 inch pipe thread
Weight.....	approximately 7 ounces
Dial size.....	approximately 1 7/8 inches
Depth.....	approximately 1 1/2 inches
Markings.....	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 61-3050

SPECIFICATIONS:

Detail.....AN-G-2a

Superseded.....AN-G-2; 94-27917

AN DRAWING NUMBER: AN5771

TYPE DESIGNATION: AN5771-2 (former Army type B-8A)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army types B-8A, B-8, B-5, B-2.

SHIPPING DATA:

Dimensions of carton.....	approximately 3 3/4 by 3 3/4 by 2 3/4 inches
Gross weight.....	approximately 1/2 pound

NAVY

SPECIFICATIONS:

Detail.....AN-G-2a

Superseded.....AN-G-2; SQ-99

AN DRAWING NUMBER: AN5771

AN PART NUMBER: AN5771-2

F. S. S. C. STOCK NUMBER: 88-G-855

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
United States Gauge Co.	AW-17/8-14-CL	A-N-B	6100126779-7	05-70-2	106A/1294
	AW-17/8-14-CZ	A-N-B	6100126779-75	05-70-2	106A/1294
The Electric Auto-Lite Co.	10059-A	A-N-B	6100131865	05-70-2	106A/1294
	10228-A	A-N-B	6100127745-5	05-70-2	106A/1294
Northern Engraving & Mfg. Co.	D-103	N			

TYPE INTERCHANGEABILITY:

Type
 AN5771-2, formerly
 Army Type B-10

Dual gage. In an emergency, it may be used in place of the AN5771-1 if one side only is connected to the lubrication system of one engine.



INDICATOR—OIL PRESSURE

ARMY TYPE B-9A ARMY TYPE B-9 F. S. S. C. NUMBER 88-I-1820

NAMES: Autosyn oil pressure indicator
Oil pressure indicator—autosyn

Indicator assembly—oil pressure gage (dual)
Indicator—oil—pressure electric type (dual)

DESCRIPTION: These autosyn dual indicators receive electrical signals from remotely located transmitters to indicate the oil pressure in the lubrication systems on multi-engine airplanes.
The B-9 and B-9A indicators are identical. The transmitters to which they are related differ in their over pressure ratings.

CHARACTERISTICS:

Range.....	0 to 200 pounds per square inch
Weight.....	approximately 1 pound
Dial size.....	approximately 2 3/4 inches
Depth.....	approximately 5 3/4 inches
Electrical plug.....	AN3106-16S-1S
Markings.....	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 61-3201

SPECIFICATIONS:

Detail.....94-27934-A
Superseded.....94-27934

TYPE DESIGNATION: B-9A and B-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS:

Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail.....SE-15

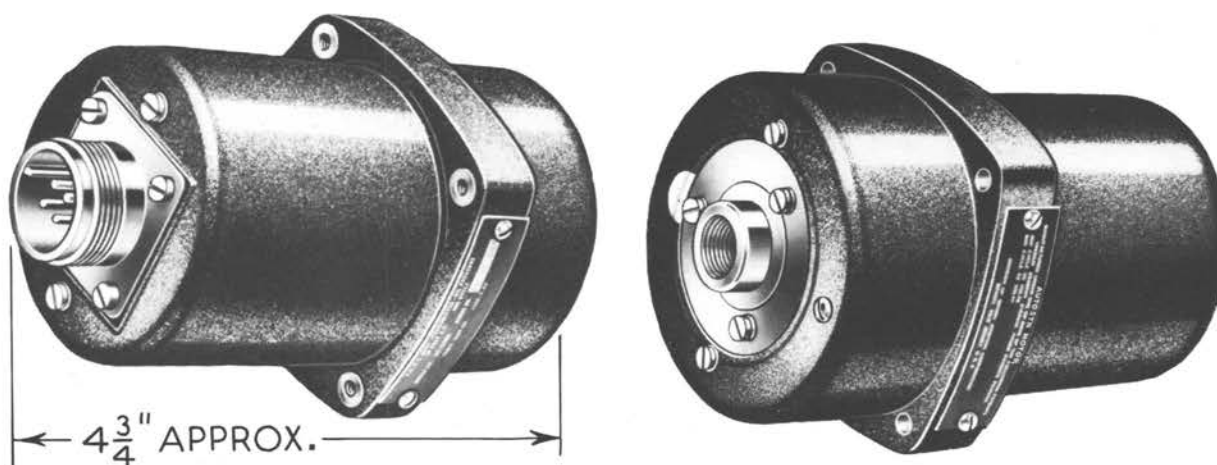
F. S. S. C. NUMBER: 88-I-1820

PROCUREMENT STATUS:

Standard. G. F. E.—Order through
A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Overpressure (pounds per square inch)
Pioneer Instrument Division	6007-4E-7-A	A-N-B	6100224645	05-55B-1	106A/931	B-9	400
	6007-4H-7-A	A-N-B	6100224675	05-55B-1	106A/1267	B-9A	600
	6007-4H-14-A	A-N-B	6100224688	05-55B-1	106A/1267	B-9A	600
	6007-4F-7-A	N-B			106A/1267	B-9A	600
	6007-4C-1-A	B-C			106A/1267	B-9A	600
	6007-4D-6-A	B-C			106A/1267	B-9A	600
	6007-4G-7-A	B-C			106A/1267	B-9A	600



TRANSMITTER—OIL PRESSURE

ARMY TYPE B-9A ARMY TYPE B-9 F. S. S. C. NUMBER 88-T-2550

NAMES: Autosyn oil pressure transmitter
Oil pressure transmitter—autosyn

Transmitter—oil pressure gage (dual)
Transmitter—oil pressure—electric type

DESCRIPTION: These are autosyn gages which electrically transmit the oil pressure in the lubrication system on multi-engine airplanes to indicators located on the instrument panel.
The B-9 and B-9A are identical except for the difference in over pressure ratings.

CHARACTERISTICS:

Range.....	0 to 200 pounds per square inch
Overpressure.....	400 pounds per square inch for B-9
Overpressure.....	600 pounds per square inch for B-9A
Pressure connection.....	1/8 inch pipe thread
Weight.....	approximately 1 pound
Depth.....	approximately 4 3/4 inches
Electrical plug.....	AN3106-14S-2S

RELATIONSHIP OF PARTS: Used with:

Army type B-9A and B-9 indicators, A. E. Reference Number 61-3201

ARMY

A. E. REFERENCE NUMBER: 61-3202

SPECIFICATIONS:

Detail.....	94-27934A
Superseded.....	94-27934

TYPE DESIGNATION: B-9A and B-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail.....SE-15

F. S. S. C. NUMBER: 88-T-2550

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A—Army, N—Navy, B—British, C—Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Overpressure (pounds per square inch)
Pioneer Instrument Division	4150-3-A3	A-N-B	6100433515	05-55B-1	106A/176	B-9	400
	4150-3-B3	A-N-B	6100433560	05-55B-1	106A/1337	B-9A	600



MANIFOLD PRESSURE GAGES

The manifold pressure gage is used to indicate the pressure of the fuel-air mixture in the engine intake system. This information is needed to prevent over-supercharging at low altitudes, or loss of power at high altitudes. It serves as a guide for adjusting the supercharger regulator to the needs of the aircraft power plant. Its use eliminates the need for throttle stops.

The earliest type gage consisted of an airtight case containing a sealed, sensitive, metal diaphragm or aneroid, from which air had been evacuated. Air from the intake manifold entered the instrument case and surrounded the diaphragm. The difference in pressure between the air in the diaphragm and the air in the case was transmitted to the face of the dial by a linkage system, and read in "inches of mercury." This type of manifold pressure gage is identical with the altimeter, except that the altimeter reading is in "feet" instead of "inches of mercury."

The manifold pressure gage in current use contains two diaphragms, shaped like bellows. One bellows, from which air has been removed, is sealed; the other receives air from the intake manifold. The two bellows oppose each other, and their pressure differential is recorded on the instrument dial. In this design, dirt, oil and foreign matter from the engine are kept out of contact with the mechanism which moves the pointer on the dial.

A third type is the "autosyn," or remote indicating electrical manifold pressure gage. This gage consists of a transmitter, located on the intake manifold, which indicates the manifold pressure to a gage on the instrument panel. The autosyn principle is described on Page 4 of this section.

Manifold pressure gages may be either single or dual. They vary in methods of lighting, and in the range of the instrument. The following general rules on interchangeability should be observed:

- A—Direct reading gages are not interchangeable with autosyn instruments.
- B—A gage having a long range may be used in place of the instrument with a shorter range.
No gage having a lower range than is originally specified should be installed.
- C—A gage having fluorescent markings illuminated by an external ultra-violet light is not interchangeable with one which is individually lighted.
- D—Single gages cannot be used in the place of dual gages. In an emergency, the dual gage may replace a single gage, providing one side of the dual gage remains disconnected.

MANIFOLD PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—MANIFOLD PRESSURE

ARMY TYPE D-2 F. S. S. C. NUMBER 88-G-760

NAMES: Manifold pressure gage

Gage assembly—manifold pressure (single)

DESCRIPTION: This is a single, direct reading gage, the internal diaphragm of which is of aneroid type of construction.

CHARACTERISTICS:

Range	10 to 50 inches of mercury
Dial size	2 3/4 inches
Depth	approximately 3 inches
Weight	approximately 3/4 pound
Pressure connections	cone union and 1/8 inch pipe thread
Lighting	individual; 1 wire, 3 volt lamp
Markings	Major—radioactive, luminous Minor—dull white

ARMY

A. E. REFERENCE NUMBER: 61-2450

SPECIFICATIONS:

Detail	94-27811-A
Superseded	27811

TYPE DESIGNATION: D-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by types D-9, D-10 and AN5770-1.

SHIPPING DATA:

Dimensions of carton	approximately 7 by 4 1/2 by 4 1/2 inches
Gross weight	approximately 1 1/4 pounds

NAVY

TYPE DESIGNATION: Mark 1A

N. A. F. DRAWING NUMBER: 39965

N. A. F. PART NUMBER: 39965-1

F. S. S. C. NUMBER: 88-G-760

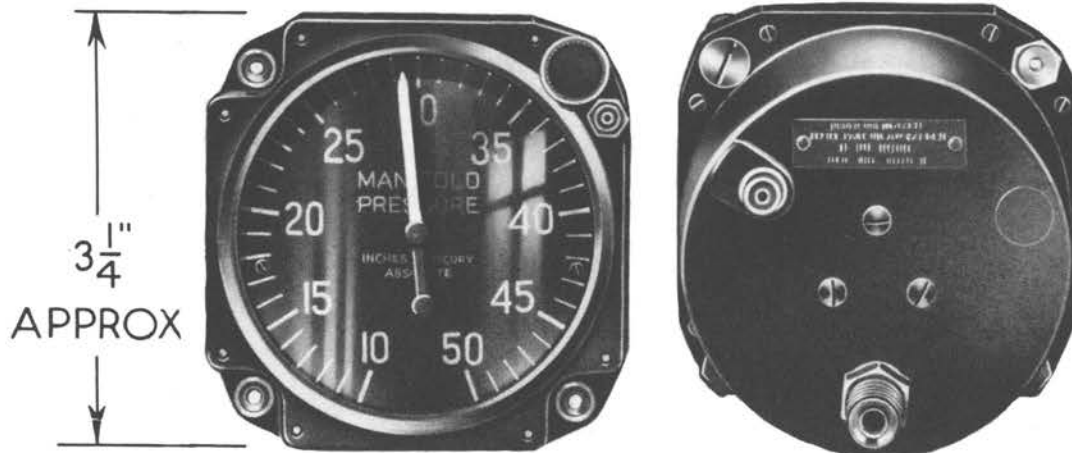
PROCUREMENT STATUS: Sub-Standard—G. F. E.—Order through A. S. O. by F. S. S. C. number. Superseded by 88-G-700 and 88-G-773.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	F. S. S. C. Number
United States Gage Co.	AW-23/4-14	A-N-B	6100124750	05-70-1	106A/542	
	AW-23/4-14-A	A-N-B	6100124750	05-70-1	106A/542	
	AW-23/4-14-E	A-N-B	6100124765	05-70-1	106A/542	
	AW-23/4-14-P	N-B			106A/542	88-G-760 *
	AW-23/4-14-B	B-C			106A/542	

*Dial has radioactive markings, but has no individual lighting.

MANIFOLD PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—MANIFOLD PRESSURE

ARMY TYPE D-9 F. S. S. C. NUMBER 88-G-700

NAMES: Manifold pressure gage

DESCRIPTION: This is a single, direct reading gage, the diaphragm, of which is of aneroid type of construction.

CHARACTERISTICS:

Weight	approximately 1 pound
Dial size	2 3/4 inches
Depth	approximately 3 inches
Range	10 to 50 inches of mercury
Pressure connection	1/8 inch pipe thread
Markings:	
Major	radioactive
Minor	phosphorescent

ARMY

A. E. REFERENCE NUMBER: 61-2600

SPECIFICATIONS:

Detail 94-27937-A

Superseded 94-27937

TYPE DESIGNATION: D-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by type D-10 and AN5770-1.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton . . . approximately 7 by 4 1/2 by 4 1/2 inches

Gross weight approximately 1 pound 5 ounces

NAVY

SPECIFICATIONS:

Detail SQ-108

BUAER DRAWING NUMBER: 7267

F. S. S. C. NUMBER: 88-G-700

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number. Superseded by 88-G-773.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	F. S. S. C. Number	Army Type	Remarks
Manning, Maxwell & Moore, Inc.	6740-88	A-N-B	6100126515	05-70C-1	106A/68	88-G-700	D-9	
	6742-90	A-N-B	6100126517	05-70C-1	106A/68	88-G-700	D-9	
	6741-89	N-B			106A/68	88-G-700		Cut out panel for dial adjustment.
	6742-126	B-C			106A/68			
Pioneer Instrument Division	1919-1R-A1	A-N-B	6100126513	05-70D-1	106A/68	88-G-700	D-9	
	1919-1Q-A1	A-N-B	6100126524	05-70D-1	106A/68	88-G-700	D-9	
	1925-1K-A1	N-B			106A/68	88-G-1080		All markings in radioactive material.
	1925-1M-A1	N-B			106A/68	88-G-1080		All markings in phosphorescent material.
	1919-1B	B-C			106A/68			
	1919-1C	B-C			106A/68			
	1911-1B	B-C			106A/68			
United States Gauge Co.	AW-2 3/4-25-G	N-B			106A/68	88-G-700		
Kollsman Instrument Division	611KN-03	N-B			106A/68	88-G-700		
	611KN-02	N-B			106A/68	88-G-700		

TYPE INTERCHANGEABILITY:

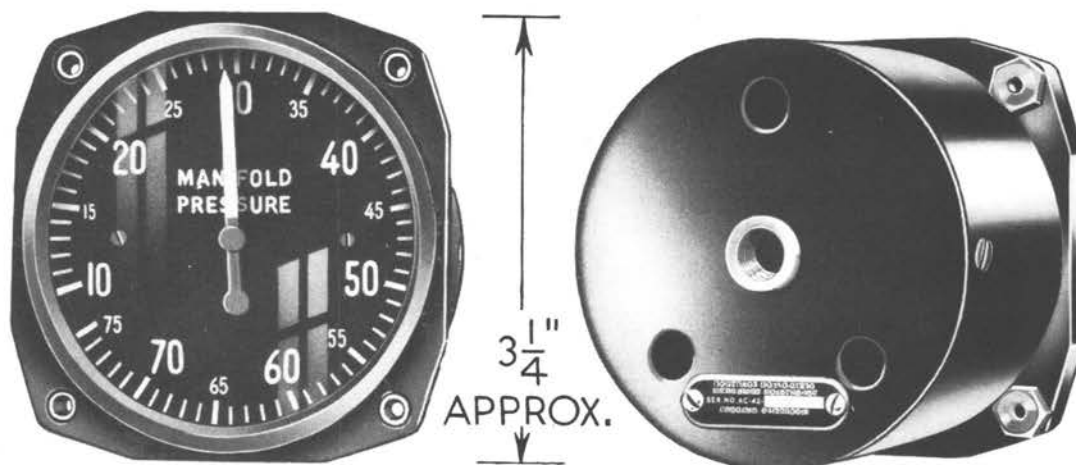
Type
AN5770-1
former Army Type D-10
AN5770-2
former Army Type D-11

Same except for difference in dial markings and inner construction.

Dual gage. Can be used in place of D-9 by connecting engine to one side of gage.



MANIFOLD PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—MANIFOLD PRESSURE

AN5770-1 FORMER ARMY TYPE D-10 F. S. S. C. NUMBER 88-G-773

NAMES: Manifold pressure gage

Gage assembly—manifold pressure (single)

DESCRIPTION: This is a single direct reading gage, the diaphragm of which is of opposed bellows construction.

CHARACTERISTICS:

Weight	approximately 1 pound
Dial size	2 3/4 inches
Depth	approximately 3 inches
Range	10 to 75 inches of mercury
Pressure connection	1/8 inch pipe thread
Markings	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 61-2750

SPECIFICATIONS:

Detail.....AN-G-9
Superseded.....94-27938-B

AN DRAWING NUMBER: AN5770

AN PART NUMBER: AN 5770-1 (former Army type D-10)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

Supersedes types D-2 and D-9.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....approximately 3 3/4 by 4 1/8
by 4 1/2 inches

Gross weight.....approximately 1 1/4 pounds

NAVY

SPECIFICATIONS:

Detail.....AN-G-9

Superseded.....AN-GG-G-71A

AN DRAWING NUMBER: AN5770

AN PART NUMBER: AN5770-1

F. S. S. C. STOCK NUMBER: 88-G-773

PROCUREMENT STATUS: Standard; G. F. E.—
Order through A. S. O. by F. S. S. C. number.
Supersedes 88-G-700 and 88-G-760.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

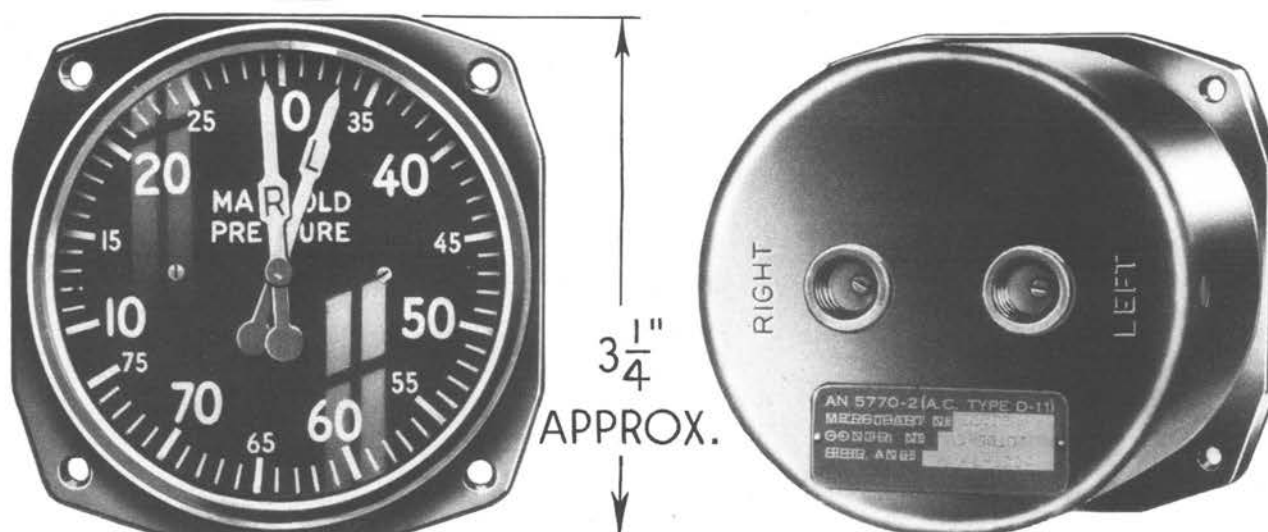
Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	F. S. S. C. Number
Manning, Maxwell & Moore, Inc.	6748-180	A-N-B	6100126527-23	05-70C-1	106A/1085	88-G-773
	6743-108	A-N-B	6100126527	05-70C-1	106A/1085	88-G-773
	6748-157	A-N-B	6100126527-2	05-70C-1	106A/1085	88-G-773
	6743-159-A	N-B			106A/1085	88-G-773
	6749-180	N-B			106A/1085	88-G-773
Ranco, Inc.	31853	A-B	6100126527-5	05-70E-1	106A/1085	
Fee and Stemwedel	FS18312	A-B	6100126527-25	05-70E-1	106A/1085	
United States Gauge Co.	AW-23 1/4-25-E	N-B			106A/1085	88-G-773
Pioneer Instrument Div.	1928-8F-A1	N-B			106A/1085	88-G-773
Kollsman Instrument Div.	788K-03	B-C			106A/1085	
	788K-02	N-B-C			106A/1085	88-G-773

TYPE INTERCHANGEABILITY:

Type
Army Type D-9
AN5770-2
former Army Type D-11

Same except for difference in dial markings and inner construction.
Dual gage. In an emergency, it can be used in place of the AN5770-1 if only one side is connected to the engine.

MANIFOLD PRESSURE GAGES INSTRUMENTS—ENGINE



GAGE—MANIFOLD PRESSURE (DUAL)

AN5770-2 FORMER ARMY TYPE D-11 F. S. S. C. NUMBER 88-G-690

NAMES: Dual manifold pressure gage

Gage assembly—manifold pressure (dual)

DESCRIPTION: Dual, direct reading gage, the diaphragm of which is of opposed bellows construction.

CHARACTERISTICS:

Weight.....	approximately 1 pound
Dial size.....	2 3/4 inches
Depth.....	approximately 3 inches
Range.....	10 to 75 inches of mercury
Pressure connection.....	1/8 inch pipe thread
Markings.....	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 61-2800

SPECIFICATIONS:

Detail.....	AN-G-9
Superseded.....	AN-GG-G-71a

AN DRAWING NUMBER: AN5770

AN PART NUMBER: AN5770-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....	approximately 3 3/4 by 4 1/8 by 4 1/2 inches
Gross weight.....	approximately 1 pound 6 ounces

NAVY

SPECIFICATIONS:

Detail.....	AN-G-9
Superseded.....	AN-GG-G-71a

AN DRAWING NUMBER: AN5770

AN PART NUMBER: AN5770-2

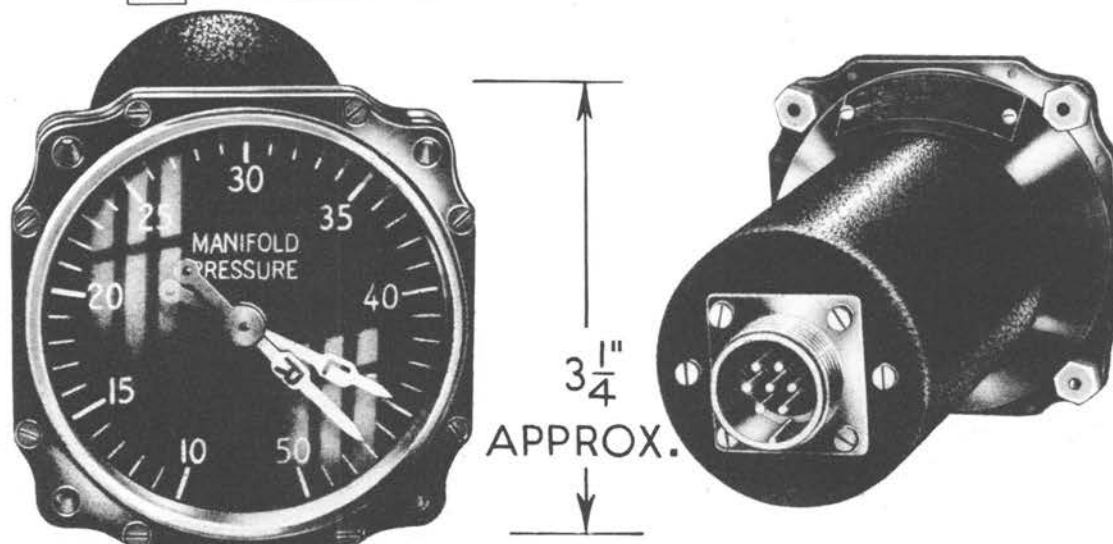
F. S. S. C. NUMBER: 88-G-690

PROCUREMENT STATUS: Standard G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Ranco, Inc.	31854	A-N-B	6100126549	05-70E-1	106A/1315
	31832	A-N-B	6100126548	05-70E-1	106A/1315
American Meter Co.	M-18201	A-N-B	6100126546-4	05-70E-1	106A/1315
	M-18313	A-N-B	6100126546-5	05-70E-1	106A/1315
Marshalltown Manufacturing Co.	31854	A-N-B	6100126549	05-70E-1	106A/1315
Manning, Maxwell & Moore, Inc.	6770-161	A-N-B	6100126546	05-70E-1	106A/1315
Kollsman Instrument Division	728K-03	B-C			106A/1315
	728K-02	B-C			106A/1315

MANIFOLD PRESSURE INDICATORS INSTRUMENTS—ENGINE



INDICATOR—MANIFOLD PRESSURE

ARMY TYPE D-8 F. S. S. C. NUMBER 88-I-1575

NAMES: Manifold pressure indicator
Autosyn manifold pressure indicator
Indicator assembly—manifold pressure gage
(dual)

Indicator manifold pressure electric dual type
(Navy)
Manifold pressure indicator—autosyn

DESCRIPTION: Dual gage of the autosyn type. It receives remote indication of manifold pressure from two electrical transmitters located at the engines.

CHARACTERISTICS:

Weight.....approximately 1 1/4 pounds
Dial size.....2 3/4 inches
Depth.....approximately 5 3/4 inches
Range.....10 to 50 inches of mercury
Electrical plug.....AN3106-16S-1S
Markings.....fluorescent material

RELATIONSHIP OF PARTS: Used with: Army type D-8 transmitter, A. E. Reference Number 61-2502.

ARMY

A. E. REFERENCE NUMBER: 61-2501

SPECIFICATIONS:

Detail.....94-27936-A
Superseded.....94-27936

TYPE DESIGNATION: D-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

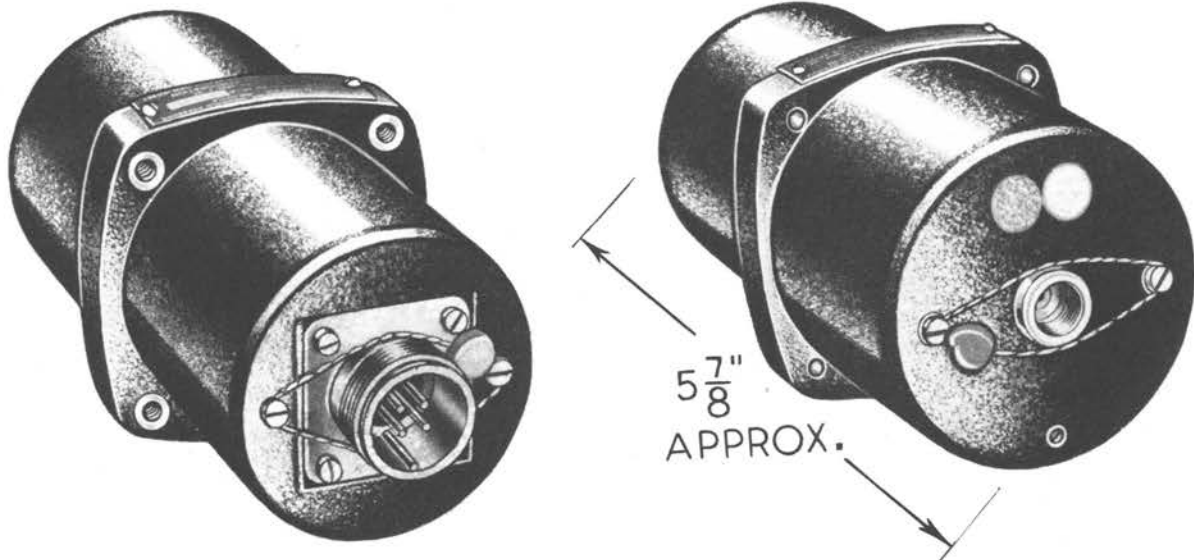
SPECIFICATIONS: Detail.....SE17

F. S. S. C. NUMBER: 88-I-1575

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Pioneer Instrument, Division of Bendix Aviation Corp.	6007-1E-7-A	A-N-B	6100223650	05-55B-1	106A/785	
	6007-1D-7-A	N-B			106A/785	
	6007-1B-1-A	B-C			106A/785	Pointer marked 1 and 2 left engines
	6007-1C-6-A	B-C			106A/785	Pointer marked 4 and 3 right engines
	6007-1F-7-A	B-C			106A/785	Pointer marked L and R
	6007-1D-7-B	N				



TRANSMITTER—MANIFOLD PRESSURE

ARMY TYPE D-8 F. S. S. C. NUMBER 88-T-2325

NAMES: Manifold pressure transmitter
Autosyn manifold pressure transmitter

Transmitter—manifold pressure gage (dual)
Transmitter—manifold pressure—electric type
(Navy)

DESCRIPTION: This autosyn transmitter, located at the aircraft engine, signals the manifold pressure to an indicator on the instrument panel.

CHARACTERISTICS:

Weight.....	approximately 1 pound
Depth.....	approximately 5 ⁷ / ₈ inches
Range.....	10 to 50 inches of mercury
Pressure connection.....	¹ / ₈ inch pipe thread
Electrical plug.....	AN3106-14S-2S

RELATIONSHIP OF PARTS: Used with: Army type D-8 indicator, A. E. Reference Number 61-2501.

ARMY

A. E. REFERENCE NUMBER: 61-2502

SPECIFICATIONS:

Detail.....	94-27936
Superseded.....	27936

TYPE DESIGNATION: D-8

MANUFACTURER: Pioneer Instrument Division, Bendix Aviation Corp. Type designation 4250-1-A1

A. S. C. STOCK NUMBER: 6100432015

TECHNICAL ORDER NUMBER: 05-55B-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail.....SE17

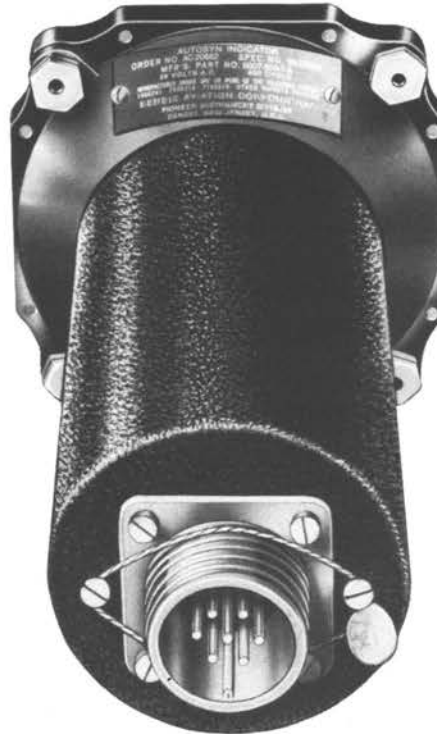
F. S. S. C. STOCK NUMBER: 88-T-2325

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/173

MANIFOLD PRESSURE INDICATORS INSTRUMENTS—ENGINE



INDICATOR—MANIFOLD PRESSURE ARMY TYPE D-8A

NAMES: Manifold pressure indicator
Autosyn manifold pressure indicator
Indicator assembly—manifold pressure
gauge (dual)

Indicator manifold pressure electrical dual type
(Navy)
Manifold pressure indicator—autosyn

DESCRIPTION: Dual gage of the autosyn type. It receives remote indication of manifold pressure from two transmitters located at the engines.

CHARACTERISTICS:

Weight.....approximately 1 1/4 pounds
Dial size.....approximately 2 3/4 inches
Depth.....approximately 5 3/4 inches
Range.....10 to 60 inches of mercury
Electrical plug.....AN3106-16S-1S
Markings.....fluorescent material

RELATIONSHIP OF PARTS: Used with: Army type D-8A transmitter, A. E. Reference Number 61-2552.

ARMY

A. E. REFERENCE NUMBER: 61-2551

SPECIFICATIONS:

Detail.....94-27936
Superseded.....27936

TYPE DESIGNATION: D-8A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

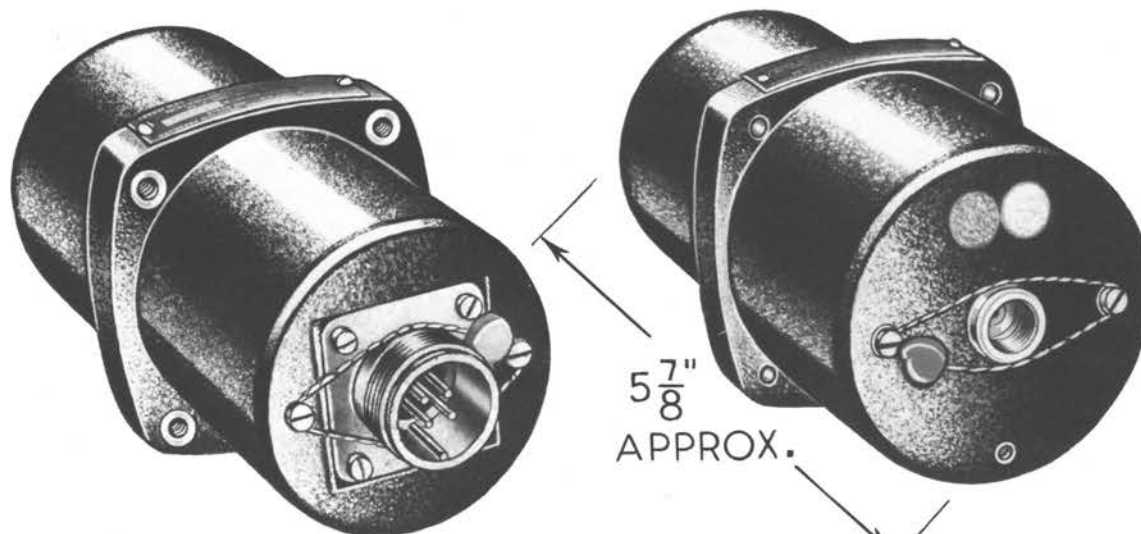
There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	6007-50A-7-A	A-B	6100223700	05-55B-1	106A/1241
	6007-50A-14-A	A-B	6100223710	05-55B-1	106A/1241



MANIFOLD PRESSURE INDICATORS INSTRUMENTS—ENGINE



TRANSMITTER—MANIFOLD PRESSURE ARMY TYPE D-8A

NAMES: Manifold pressure transmitter Transmitter—manifold pressure gage (dual)
Autosyn manifold pressure transmitter Transmitter—manifold pressure—electric type (Navy)

DESCRIPTION: This autosyn transmitter, located at the aircraft engine, signals the manifold pressure to an indicator on the instrument panel.

CHARACTERISTICS:

Weight.....approximately 1 pound
Depth.....approximately $5\frac{7}{8}$ inches
Range.....10 to 60 inches of mercury
Pressure connection..... $\frac{1}{8}$ inch pipe thread
Electrical plug.....AN3106-14S-2S

RELATIONSHIP OF PARTS: Used with: Army type indicator D-8A, A. E. Reference Number 61-2551.

ARMY

A. E. REFERENCE NUMBER: 61-2552

SPECIFICATIONS:

Detail.....94-27936
Superseded.....27936

TYPE DESIGNATION: D-8A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	4250-2-A2	A-B	6100432025	05-55B-1	106A/1240
	4250-2-B2	A-B	6100432035	05-55B-1	106A/1240

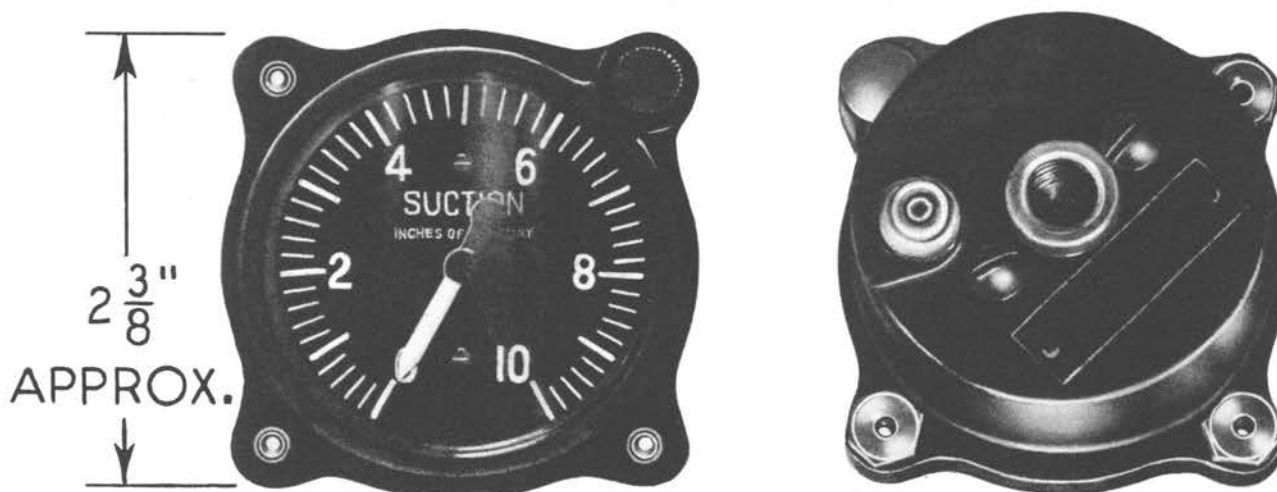


SUCTION GAGES

The suction gage is an instrument which measures and indicates the amount of suction actuating air-driven gyroscopic instruments. It consists of a standard Army bakelite case which houses the activating mechanism, a graduated dial, and a pointer.

The heart of the mechanism is a pressure sensitive element connected to the suction line which runs from the engine-driven vacuum pump or Venturi tube. This element is connected to the dial pointer by a system of gears. When variations occur in the normal output of the pump or Venturi tube, the element expands or contracts, and this movement is indicated by the pointer on the dial.

The pressure sensitive element may be either a diaphragm or a bellows. When a diaphragm is used, the case is either vented to the atmosphere, or airtight, and connected to the static line of the airspeed tube. When a bellows is used, the case is vented to the atmosphere, that is, the pressure in the case is the same as that of the airplane cabin.



GAGE—SUCTION

ARMY TYPE F-2

NAMES: Suction gage

Gage assembly—suction

DESCRIPTION: The Army type F-2 suction gage has a pressure sensitive element of the diaphragm type.

CHARACTERISTICS:

Lighting.....	individual; single wire, 3-volt lamp
Range.....	0 to 10 inches of mercury
Pressure connection.....	1/8 inch pipe thread
Weight.....	approximately 1/2 pound
Dial.....	1 7/8 inches diameter
Depth.....	approximately 2 3/8 inches

ARMY

A. E. REFERENCE NUMBER: 60-3200

SPECIFICATIONS:

Detail.....	94-27813-A
Superseded.....	94-27813

TYPE DESIGNATION: F-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by types F-3, F-4 and AN5771-5.

SHIPPING DATA:

Dimensions of carton.....	approximately 4 1/2 by 4 1/2 by 4 1/4 inches
Gross weight.....	approximately 3/4 pound

NAVY

There is no Navy equivalent for this item.

(Continued on Page 52)



GAGE—SUCTION

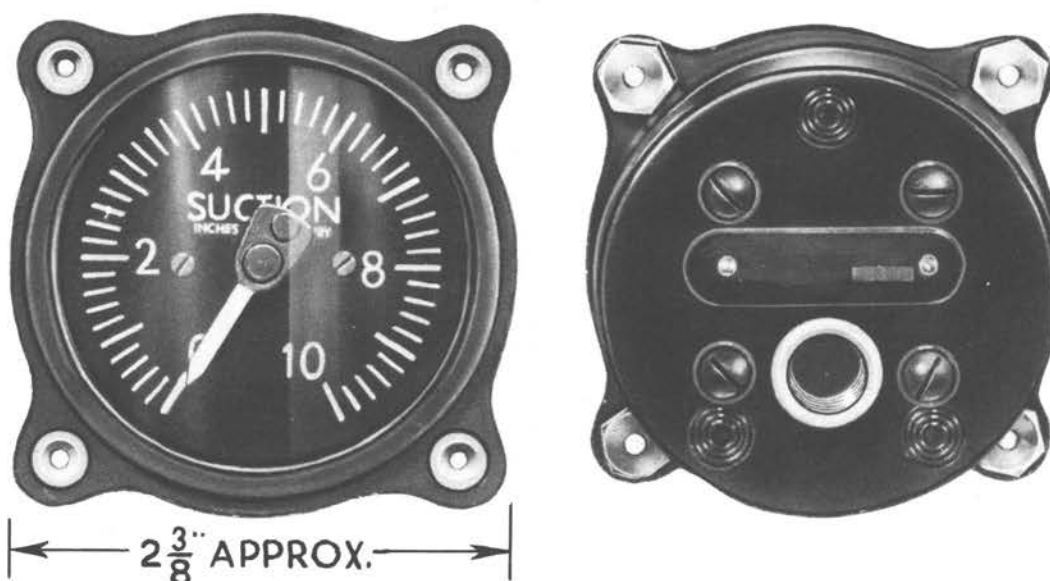
(Continued from Page 51)

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Lighting and Dial Finish	Pressure Connection	Army Type
United States Gauge Co.	AW2-35	A-B	6000133750	05-80-1	106A/82	Individual (A)	1/8 inch pipe thread	F-2
	AW2-35A	A-B	6000134000	05-80-1	106A/82	Individual (A)	1/8 inch pipe thread	F-2
	AW2-35D	A-B	6000134250	05-80-1	106A/82	Individual (A)	1/8 inch pipe thread	F-2
	AW-1 7/8-21-B	A-B	6000132175	05-80-1	106A/82	Individual (A)	1/8 inch pipe thread	F-2
	AW2-35E	B-C			106A/82	Individual (A)	1/8 inch pipe thread	F-2
Pioneer Instrument Division	2500-1A-A1	B-C			106A/82	Individual	1/8 inch pipe thread	F-2
	2503-1A-A1	B-C			106A/82	Individual	1/8 inch pipe thread	F-2
	2504-1A-A1	B-C			106A/177	Individual	1/8 inch pipe thread	F-2
	2600-1A-A1	B-C			106A/178	Individual (A)	1/8 inch pipe thread	F-2
	2600-1A-B1	B-C			106A/178	Individual (A)	1/8 inch pipe thread	F-2
	2600-1A-A1	B-C			106A/178	Individual (A)	1/8 inch pipe thread	F-2
	2601-1A-B1	C				Individual (A)	1/8 inch pipe thread	F-2
	2601-1F-B1	C				Individual (A)	1/8 inch pipe thread	F-2
	2601-1J-B1	C				Individual (B)	1/8 inch pipe thread	F-2
	2603-1A-A1	C				Individual	1/8 inch pipe thread	F-2
	2603-1C-A1	C				Individual	1/8 inch pipe thread	F-2
	2603-1D-A1	C				Individual	1/8 inch pipe thread	F-2
	2603-1C-B1	C				Individual	1/8 inch pipe thread	F-2
	2603-G-B1	C				Individual	1/8 inch pipe thread	F-2

(A) Major graduations finished with radium luminous material.

(B) Dial markings finished with fluorescent or phosphorescent material.



GAGE—SUCTION

ARMY TYPE F-3 F. S. S. C. NUMBER 88-G-925

NAMES: Suction gage

Gage assembly—suction

DESCRIPTION: The Army type F-3 suction gage has a pressure sensitive element of the bellows type.

CHARACTERISTICS:

Markings.....	fluorescent material
Range.....	0 to 10 inches of mercury
Pressure connection.....	$\frac{1}{8}$ inch pipe thread
Weight.....	approximately $\frac{1}{2}$ pound
Dial.....	$1\frac{7}{8}$ inches diameter
Depth.....	approximately $2\frac{3}{8}$ inches

ARMY

A. E. REFERENCE NUMBER: 60-3400

SPECIFICATIONS: Detail.....94-27923

TYPE DESIGNATION: F-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by F-4 and AN5771-5.

SHIPPING DATA:

Dimensions of carton.....	approximately $4\frac{1}{2}$ by $4\frac{1}{2}$ by $4\frac{1}{4}$ inches
Gross weight.....	approximately $\frac{3}{4}$ pound

NAVY

SPECIFICATIONS: Detail.....SQ98

BUAER DRAWING NUMBER: 831-SK

F. S. S. C. NUMBER: 88-G-925

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number. Superseded by 88-G-924.

(Continued on Page 54)

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	F. S. S. C. Number	Pressure Connection	Army Type	Remarks
United States Gauge Co.	AW-17/8-21-AI	A-B	6000134510	05-80-1	106A/179		1/8 inch pipe thread	F-3	
	AW-17/8-21-K	N-B			106A/179	88-G-925	1/8 inch pipe thread	F-3	
	AW-17/8-21-AJ	B-C			106A/179		1/8 inch pipe thread	F-3	
	AW-17/8-21-X	N-B			106A/179	88-G-925	1/8 inch pipe thread	F-3	
	AW-17/8-21-AG	N-B			106A/179	88-G-925	1/8 inch pipe thread	F-3	
	AW-17/8-21-Q	A-N-B	6000134535	05-80-1	106A/1104	88-G-924	(Two) 1/8 inch pipe thread	F-4	Now designated AN5771-5.
	AW-17/8-21-AK	A-N-B	6000135530	05-80-1	106A/1104	88-G-924	(Two) 1/8 inch pipe thread	F-4	
Collens Instrument Co.	200	A-B	6000134540	05-80-1	106A/1104		(Two) 1/8 inch pipe thread	F-4	
Manning, Maxwell & Moore, Inc.	6704-152	A-B	6000134554	05-80-1	106A/1104		(Two) 1/8 inch pipe thread	F-4	
	6704-185	A-B	6000134547	05-80-1	106A/1104		(Two) 1/8 inch pipe thread	F-4	
	6703-83	A-B	6000134517	05-80-1	106A/179		1/8 inch pipe thread	F-3	
	6702-66	B-C			106A/179		1/8 inch pipe thread	F-3	

(Continued from Page 53)

GAGE-SUCTION

SUCTION GAGES
INSTRUMENTS—ENGINE

(RESTRICTED)



(RESTRICTED)

**GAGE—SUCTION****AN5771-5 FORMER ARMY TYPE F-4 F. S. S. C. NUMBER 88-G-924**

NAMES: Suction gage

Gage assembly—suction

DESCRIPTION: The type AN5771-5 suction gage has a pressure sensitive element of the diaphragm type.

CHARACTERISTICS:

Markings.....	fluorescent material
Range.....	0 to 10 inches of mercury
Pressure connections.....	two 1/8 inch pipe thread
Weight.....	approximately 1/2 pound
Dial.....	1 7/8 inches diameter
Depth.....	approximately 1 1/2 inches

ARMY

A. E. REFERENCE NUMBER: 60-3600

SPECIFICATIONS:

Detail.....	AN-G-2
Superseded.....	94-27336

AN DRAWING NUMBER: AN5771

TYPE DESIGNATION: AN5771-5 (former Army type F-4)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA:

Dimensions of carton.....	approximately 4 1/2 by 4 1/2 by 4 1/4 inches
Gross weight.....	approximately 3/4 pound

NAVY

SPECIFICATIONS: Detail.....AN-G-2

AN DRAWING NUMBER: AN5771. Superseded NAF drawing number 310515-1

AN PART NUMBER: AN5771-5

F. S. S. C. NUMBER: 88-G-924

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Collens Instrument Co.	200	A-N-B	6000134540	05-80-1	106A/1104
Manning, Maxwell & Moore Inc.	6704-152	A-N-B	6000134554	05-80-1	106A/1104
	6704-185	A-N-B	6000134547	05-80-1	106A/1104
United States Gauge Co.	AW-1 7/8-21-Q	A-N-B	6000134535	05-80-1	106A/1104
	AW-1 7/8-21-AK	A-N-B	6000135530	05-80-1	106A/1104



FUEL PRESSURE WARNING SIGNALS

FUEL pressure warning signals are used to attract the pilot's attention when the fuel pressure falls below a predetermined point.

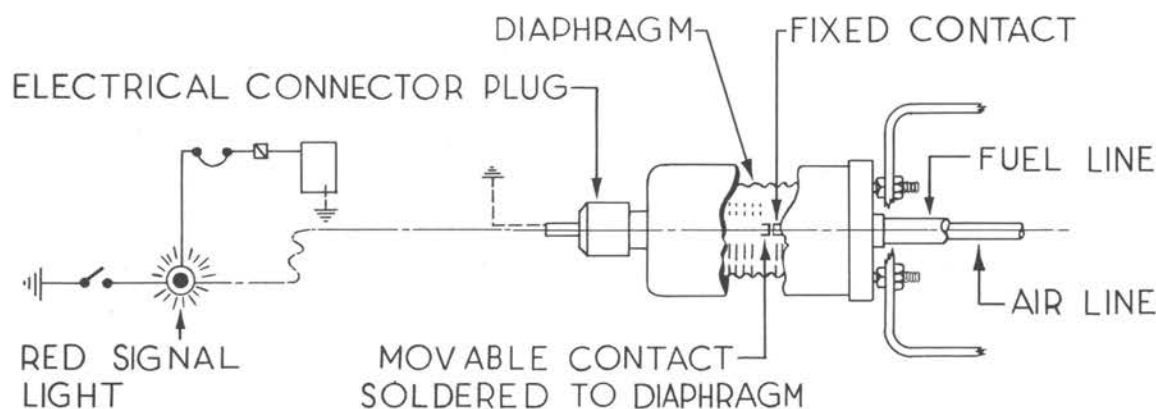
The mechanism consists of a diaphragm and a set of electrical contacts. Motion of the diaphragm is transmitted to one of the contacts. The other contact is stationary. The stationary contact is adjustable, so that the fuel pressure which causes the contacts to close may be adjusted to suit the individual installation. Fuel and air connections are made into the base of the instrument, while the electrical plug connection is at the opposite end of the unit. Where supercharger installations are used, the air connection is made into the carburetor manifold; otherwise, this connection is left open to the atmosphere through the use of a drilled plug.

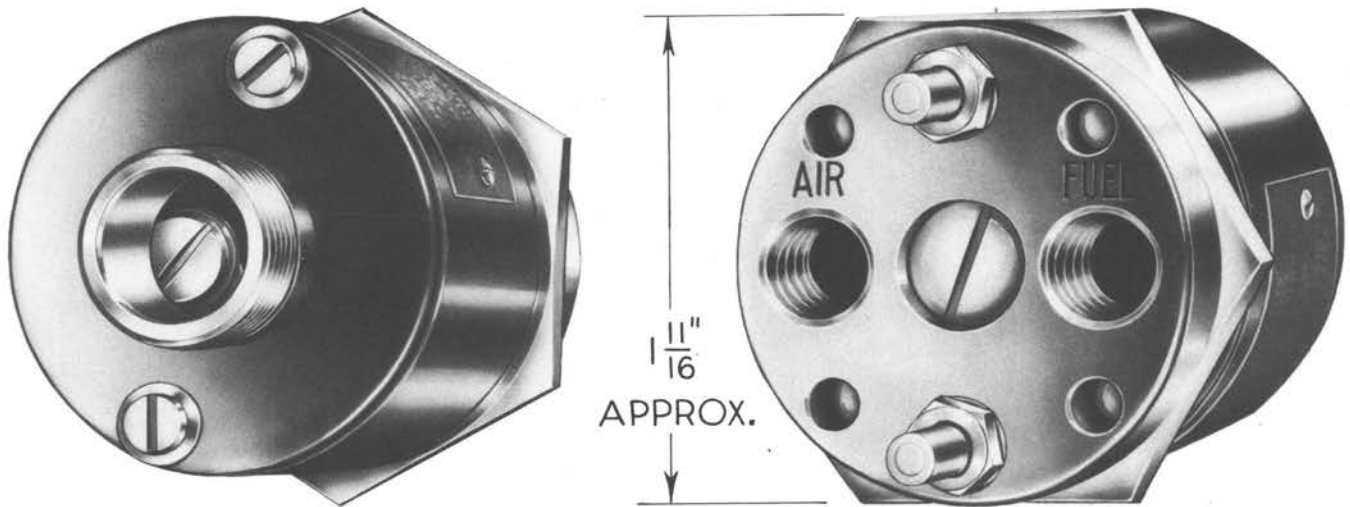
Fuel enters the signal through an inlet at the base of the unit, and acts directly upon the diaphragm. Under operating conditions, when the pressure on the inside of the instrument is the normal operating pressure, the con-

tacts are held apart by the fuel pressure on the diaphragm. With decreasing fuel pressure, the contacts are brought closer, and when the pressure falls below the pre-set point, the contacts are closed and the circuit is completed. With the closing of the circuit, a warning lamp lights in the pilot's or engineer's compartment.

Similar signal switches having sufficient current capacity may also be used in an airplane for starting and stopping an electric motor-driven pump. The pump supplies fuel from an auxiliary tank to the engine (or engines), or transfers fuel from one tank to another. By the addition of the signal switch, it automatically responds to overcome the lowered fuel pressure.

Instruments of this same type are applicable to air (vacuum), oxygen and oil systems, for warning of pressure conditions outside of predetermined limits. Those used for oxygen pressure warnings are treated, and will be found described, in the Index Section describing Oxygen Equipment.





SIGNAL—FUEL PRESSURE

ARMY TYPE C-2

NAMES: Fuel pressure signal
Signal assembly; fuel pressure, type C-2
Warning unit—fuel pressure

Pressure signal, fuel
Fuel pressure signal switch

DESCRIPTION: The Army type C-2 fuel pressure signal is a diaphragm device used to warn of dangerously low fuel pressure. It is constructed for use on two-wire electrical systems, but may be used on one-wire systems by grounding one terminal.

CHARACTERISTICS:

Dimensions	approximately 2 $\frac{11}{16}$ by 1 $\frac{11}{16}$ by 1 $\frac{11}{16}$ inches
Weight	approximately 0.45 pound
Adjustable pressure range	2 to 10 pounds per square inch
Voltage	12 or 24 volt AC or DC current
Electrical connections	recessed screw plug

ARMY

A. E. REFERENCE NUMBER: 60-8425

SPECIFICATIONS:

Detail	94-32175
Superseded	32175-A

TYPE DESIGNATION: C-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

(Continued on Page 58)

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Models (X)	Remarks
Pioneer Instrument Division	3120-0	3120-2-A	A-B	483331202A	03-10F-3	106A/907	X	Army type C-21; pre-set contact point at decreasing pressure of 2¼ pounds per square inch.
	3120-0	3120-3-A	A-B	483331203A		106A/907	X	Army type C-2; pre-set contact point varies between 2 and 20 pounds per square inch.
	3110-0	3110-C	B-C			106A/153	X	Special two pin plug; pre-set point varies between 2 and 20 pounds per square inch.
	3110-0	3110-A	B-C			106A/1289	X	Special two pin plug; pre-set point varies between 2 and 20 pounds per square inch.
	3110-0	3110-1-C	B-C			106A/154		Special two pin plug.
	3100-0	3100-A	C				X	12 volt only; fuel pressure connection only; pre-set point over entire range.
	3113-0	3113-1-A	C					
	3123-0	3123-3-A	A-B	483331233A		106A/1016	X	A. A. F. type C-3; has receptacle AN3102-12S-1P.
	3123-0	3123-1-A	A-B	483331231A	03-10F-3	106A/1016	X	A. A. F. type C-3; has receptacle AN3102-12S-1P.
	3110-0	3110-B	C					Equivalent to 3115-A.
	3115-0	3115-A	C					Equivalent to 3110-B.
Kollsman Instrument Division	160B-01	160B-01	C				X	
	160B-032	160B-032	C				X	Single wire circuit.
	160-021	160-021	B-C			106A/278		
	160-011	160-011	B-C			106A/114		Single wire circuit.
	160B-09	160B-09	C				X	
	160B-011	160B-011	B-C			106A/1202	X	Single wire circuit; similar to 160-011.
	160B-021	160B-021	B-C			106A/1204	X	Similar to 160-021.
	160B-019	160B-019	C				X	Single wire circuit.
	160-010	160-010	B-C			106A/229		
	160-020	160-020	B-C			106A/836		
	160B-020	160B-020	C				X	Single wire circuit.
	160B-010	160B-010	B-C			106A/1203	X	Similar to 160-010.
Manning, Maxwell & Moore	6809-A	6809-A	A-B	48286809A	03-10F-3	106A/907	X	Army type C-2.
	6800	6800	A-B	48286800	03-10F-3	106A/1016		A. A. F. type C-3; has receptacle AN3106-12S-3S.
U. S. Gage Co.	Fig. 2110		C					Bronze Bourdon tube movement.
Air Associates, Inc.	35D4127	35D4127	B-C			106A/2		

(Continued from Page 57)

SIGNAL-FUEL PRESSURE

FUEL PRESSURE WARNING SIGNALS
 INSTRUMENTS—ENGINE

(RESTRICTED)



(RESTRICTED)



FUEL PRESSURE WARNING SIGNALS INSTRUMENTS—FLIGHT



NAMES: Fuel pressure signal
Signal assembly, fuel pressure, type C-3
Warning unit—fuel pressure

Pressure signal, fuel
Fuel pressure signal switch

DESCRIPTION: The Army type C-3 fuel pressure signal is used to warn of dangerously low fuel pressure. It is constructed for use on two-wire electrical systems, but may be used on single-wire systems by grounding one terminal.

CHARACTERISTICS:

Adjustable pressure range	2 to 20 pounds per square inch
Dimensions	approximately 2 1/8 by 2 1/8 by 2 1/8 inches
Weight	approximately 0.45 pound
Voltage	12 or 24 volts A.C. or D.C.
Electrical receptacle	AND10066-12S-3P

ARMY

A. E. REFERENCE NUMBER: 60-8450

SPECIFICATIONS:

Detail	94-32215-B
Superseded	94-32215-A

TYPE DESIGNATION: C-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

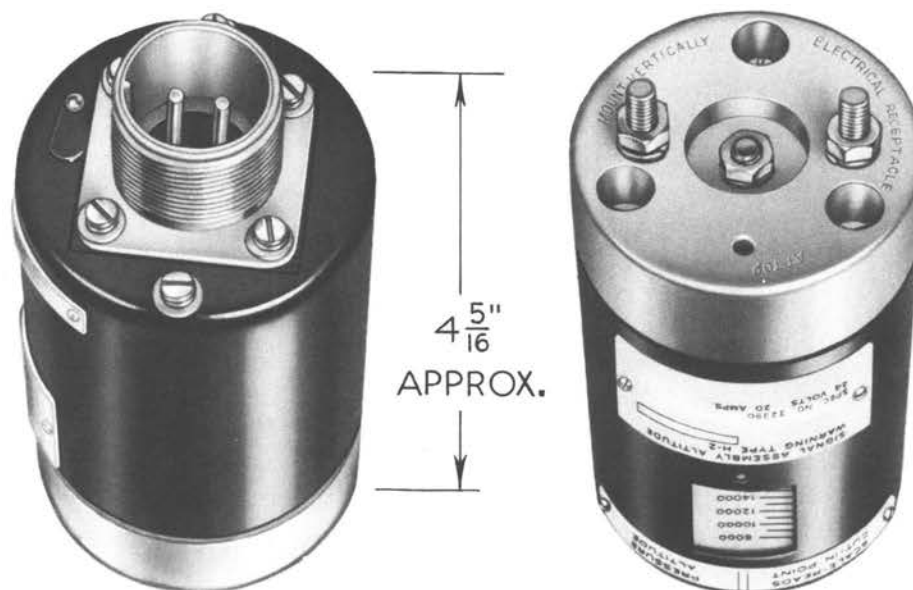
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manu- facturer's Model Identi- fication	Manu- facturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Models (X)	Remarks
Kollsman Instrument Division	160-010	160-010	B-C			106A/229		
	160-020	160-020	B-C			106A/836		
	160B-010	160B-010	B-C			106A/1203	X	Similar to 160-010 except for stronger capsule.
	160B-020	160B-020	C				X	Single wire circuit.
	160B-09	160B-09	C				X	
	160B-019	160B-019	C				X	Single wire circuit.
Pioneer Instrument Division	3123-0	3123-1-A	A-B	4833-3123-1-A	03-10F-3	106A/1016	X	Army type C-3; pre-set point at 12 p.s.i. Has receptacle AN3102-12S-1P.
	3123-0	3123-3-A	A-B	4833-3123-3-A		106A/1016	X	Army type C-3; pre-set varies between 2 and 20 p.s.i. Has receptacle AN3102-12S-1P.
	3110-0	3110-C	B-C			106A/153	X	
	3110-0	3110-1-C	B-C			106A/154		
	3110-0	3110-A	C					
	3100-0	3100-A	C					
	3113-0	3113-1-A	C					
	3110-0	3110-B	C					Equivalent to 3115-A.
Manning, Maxwell & Moore, Inc.	3115-0	3115-A	C					Equivalent to 3110-B.
	6800	6800	A-B	4828-6800	03-10F-3	106A/1016	X	Army type C-3. Has receptacle AN3106-12S-3S.
Air Associates, Inc.	35D4127	35D4127	B-C			106A/2		

NOTE: In an emergency these units may be used to give the same service as those under Army Air Force procurement, mounting details not withstanding.



SIGNALS INSTRUMENTS—ENGINE



SIGNAL—ALTITUDE WARNING ARMY TYPE H-2

NAMES: Altitude warning signal
Signal assembly—altitude warning

Signal, altitude warning, type H-2 (air-
craft—24 volts D.C.)
Altitude warning signal switch assembly

DESCRIPTION: The Army type H-2 altitude warning signal is used to warn crews in pressurized cabin airplanes. When the air pressure in the cabin falls below a pre-set value because of leakage, puncture or failure of the cabin supercharger, the signal sounds a warning horn to notify the crew that individual oxygen masks must be donned.

The signal consists of an enclosed diaphragm, or bellows, which closes a set of contacts when the cabin pressure falls below the set value. The contacts complete a circuit, which energizes a relay and solenoid to sound the warning.

For convenience, the calibration of the setting dial of the signal is in terms of altitude, in feet, instead of equivalent pressure units.

CHARACTERISTICS:

Altitude setting range.....	8,000-16,000 feet.
Dimensions.....	approximately $4\frac{5}{16}$ by $2\frac{1}{8}$ by $2\frac{1}{8}$ inches
Weight.....	approximately $\frac{3}{4}$ pound
Voltage.....	24 volts, direct current
Electrical receptacle.....	AND10066-16-11P

ARMY

A. E. REFERENCE NUMBER: 60-8575

SPECIFICATIONS:

Detail.....	94-32390
Superseded.....	32390

TYPE DESIGNATION: H-2

MANUFACTURER'S PART NUMBER: Baker and Company Incorporated. E. H. A100.

TECHNICAL ORDER NUMBER: AN 05-1-40

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



WHEEL AND FLAP POSITION INDICATORS

Position indicators show the positions of the landing wheels and the wing flaps. They show that the wheels and wing flaps are in up or down positions and intermediate stages, and whether the wheels are locked in position.

The instrument consists of an indicator and four transmitters. The indicator is mounted on the instrument panel, and the transmitters are mounted near each wheel and the wing flaps. The transmitters are mechanically connected to the wheel struts and wing flaps by links clamped to the transmitter shaft.

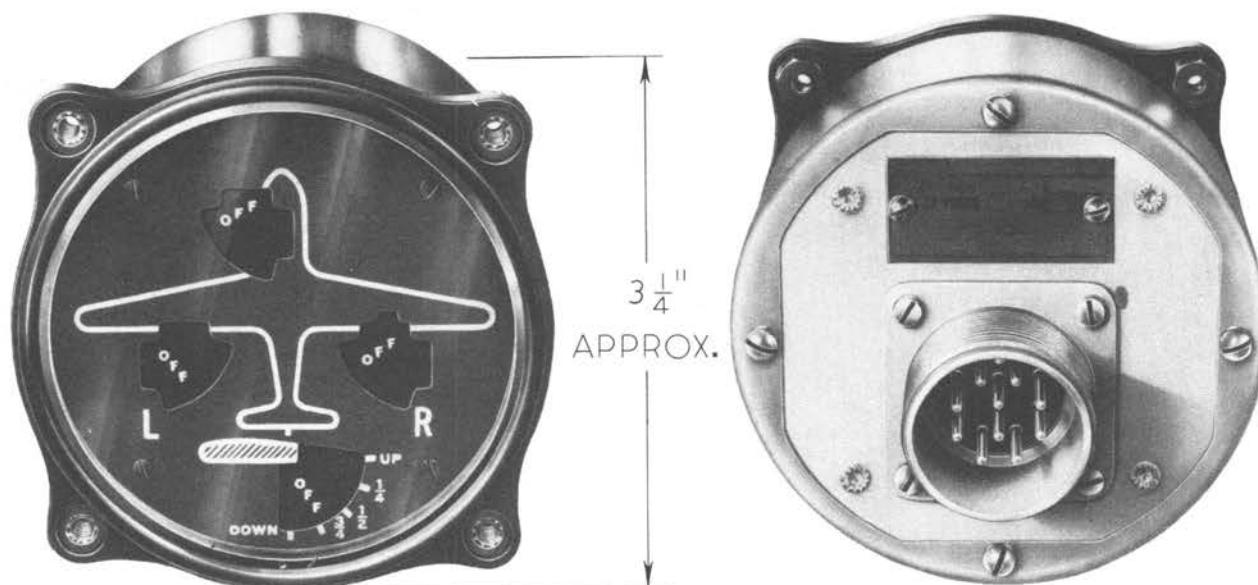
The indicator is composed of four elements, each operating a pointer and each electrically connected to a transmitter. In the transmitter, a rheostat arm is operated by the shaft. When the position of the wheel or wing flaps changes, the shaft rotates. This varies the resistance in the rheostat, which, in turn, causes the small rotor in the corresponding element of the indicator to change position. The pointer for this element moves as the rotor moves, and thus indicates on the dial any change in position of either the wheels or flaps.

A small plan diagram of an airplane is on the face of the dial. The right and left main wheel pointers are on the wings of the diagram and the auxiliary wheel pointer in the nose or tail of the diagram, as the case may be. When the indicator is for nose wheel installation, the pointer showing position of flaps is at the bottom of the dial; when the indicator is for a tail wheel installation, the pointer showing position of the flaps is at the top.

These position indicators are designed for operation from a 24-volt direct current power system, but will operate on voltages from 20 volts to 30 volts.



POSITION INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—ELECTRICAL WHEEL AND FLAP POSITION

ARMY TYPE A-2

NAMES: Electrical wheel and flap position indicator Indicator—undercarriage and flap retraction (British)
Indicator, position wheel and flap Indicator, flap and wheel position (British)

DESCRIPTION: This indicator is for nose wheel type installation. It indicates to the pilot whether the flaps are up, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ or fully on, and whether the wheels are up or down, and locked or unlocked. Indications are shown on a dial representing the airplane, and are produced by electrical impulses received from four transmitters, one mounted at each main landing wheel, one at the nose wheel and one at the flaps.

CHARACTERISTICS:

Dial size..... $2\frac{3}{4}$ inches diameter
Dimensions..... approximately $3\frac{1}{4}$ by $3\frac{1}{4}$ by $2\frac{1}{2}$ inches
Markings..... fluorescent material
Weight..... approximately 1 pound

RELATIONSHIP OF PARTS: Used with:

Four electrical wheel and flap position transmitters.... A. E. Reference Number 60-3128

ARMY

A. E. REFERENCE NUMBER: 60-3126

SPECIFICATIONS:

Detail..... 94-27939A
Superseded..... 94-27939

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by AN5780-2.

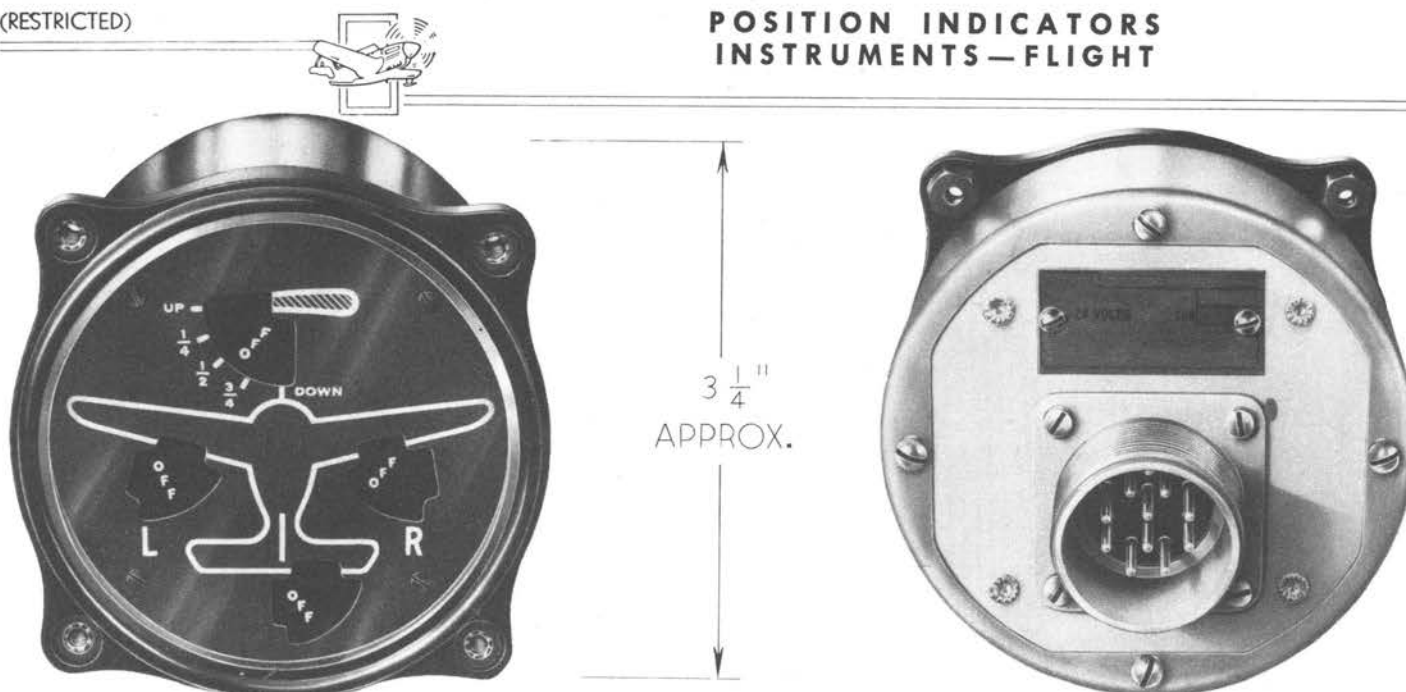
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	Model 882, Type 5	106802	A	6000228504-7	05-55C-1		Only Weston's A-2 transmitters may be used with this A-2 indicator.
		103357	A	6000228505	05-55C-1		Only Weston's A-2 transmitters may be used with this A-2 indicator.
	Model 882, Type 2	103354	A-B			106A/1064	
General Electric Co.	8DJ17AAA	4149507	A-B	6000228503	05-55A-2	106A/1125	These A-2 indicators may be used with any A-3 or AN transmitter, and may be interchanged with any A-3 or AN indicator.
	8DJ17AAM	4149507	A	6000228504-54	05-55A-2		



INDICATOR—ELECTRICAL WHEEL AND FLAP POSITION

ARMY TYPE A-2

NAMES: Electrical wheel and flap position indicator
Indicator, position, wheel and flap
Indicator, flap and wheel position (British)

Indicator—undercarriage and flap retraction
(British)

DESCRIPTION: This indicator is for tail wheel type installation. It indicates to the pilot whether the flaps are up, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ or fully on, and whether the wheels are up or down and locked or unlocked. Indications are shown on a dial representing the airplane and are produced by electrical impulses received from four transmitters, one mounted at each main landing wheel, one at the tail wheel, and one at the flaps.

CHARACTERISTICS:

Dial size..... $2\frac{3}{4}$ inches diameter
Dimensions..... approximately $3\frac{1}{4}$ by $3\frac{1}{4}$ by $2\frac{1}{2}$ inches
Markings..... fluorescent material
Weight..... approximately 1 pound

RELATIONSHIP OF PARTS: Used with:

Four electrical wheel and flap position transmitters... A. E. Reference Number 60-3128.

ARMY

A. E. REFERENCE NUMBER: 60-3127

SPECIFICATIONS:

Detail..... 94-27939A
Superseded..... 94-27939

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by AN5780-2 indicator, A. E. Reference Number 60-3151, F. S. S. C. Number 88-I-1890.

SHIPPING DATA: Shipped as a complete unit.

NAVY

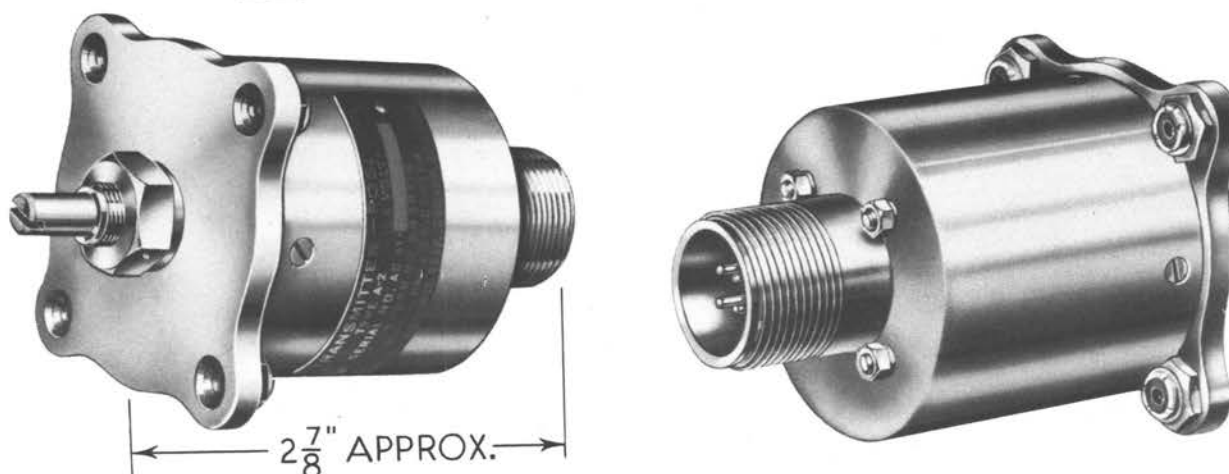
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE

Models are used in services as noted in column 4

A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Manufacturer's Part Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	Model 882, Type 1	102182	A-B	6000228400	05-55C-1	102182	106A/1339	Only Weston's A-2 transmitters may be used with this A-2 indicator.
	Model 882, Type 4	106801	A-B	6000228504-6	05-55C-1	102801	106A/1339	Only Weston's A-2 transmitters may be used with this A-2 indicator.
General Electric Co.	8DJ17AAB	4149507	A-B	6000228504	05-55A-2		106A/1339	These A-2 indicators may be used with any A-3 or AN transmitter, and may be interchanged with any A-3 or AN indicator.
	8DJ17AAN	4149507	A-B	6000228504-55	05-55A-2		106A/1339	These A-2 indicators may be used with any A-3 or AN transmitter, and may be interchanged with any A-3 or AN indicator.



TRANSMITTER—ELECTRICAL WHEEL AND FLAP POSITION

ARMY TYPE A-2

NAMES: Electrical wheel and flap position transmitter Transmitter, position, wheel and flap

DESCRIPTION: The Army type A-2 electrical wheel and flap position transmitter originates the impulses which actuate the indicator in the cockpit. Four are required for each installation; one at each of the main landing wheels, one at the tail or nose wheel and one at the flaps.

CHARACTERISTICS:

Dimensions approximately $1\frac{3}{4}$ inches diameter by $2\frac{7}{8}$ inches long
Weight approximately $\frac{1}{3}$ pound

RELATIONSHIP OF PARTS: Used with:

Electrical wheel and flap position indicator A. E. Reference Numbers 60-3126 or 60-3127

ARMY

A. E. REFERENCE NUMBER: 60-3128

SPECIFICATIONS:

Detail 94-27939A
Superseded 94-27939

TYPE DESIGNATION: A-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by AN5780-2 transmitter, A. E. Reference Number 60-3151, F. S. S. C. Number 88-I-1890.

SHIPPING DATA: Shipped as a complete unit.

NAVY

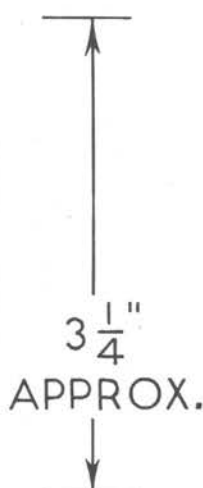
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Manufacturer's Part Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	9961-1	D-102183	A-B	6000435860	05-55C-1	102183	106A/1063	These transmitters can only be used with Weston's A-2 indicator.
		D-106803	A-C	6000437475	05-55C-1	106803		These transmitters can only be used with Weston's A-2 indicator.
General Electric Co.	8TJ19AAA	4149608	A-B	6000435480	05-55A-2		106A/1145	This transmitter may be used with any A-3 or AN indicator, and may be interchanged with any A-3 or AN transmitter.



POSITION INDICATORS INSTRUMENTS—FLIGHT



3 ¹/₄"
APPROX.



INDICATOR—ELECTRICAL WHEEL AND FLAP POSITION

AN 5780-2

FORMER ARMY TYPE A-3

F. S. S. C. NUMBER 88-I-1890

NAMES: Electrical wheel and flap position indicator
Indicator, position, wheel and flap
Indicator—flap and wheel position (British)

Indicator—undercarriage and flap retraction
(British)

DESCRIPTION: This indicator is for a nose wheel installation. It indicates to the pilot whether the flaps are up, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$ or fully on, and whether the wheels are up or down, and locked or unlocked. Indications are shown on a dial representing the airplane, and are produced by electrical impulses received from four transmitters, one mounted at each main landing wheel, one at the nose wheel and one at the flaps.

CHARACTERISTICS:

Dial size.....2 ³/₄ inches diameter
Dimensions.....approximately 3 ¹/₄ by 3 ¹/₄ by 2 ³/₄ inches
Markings.....fluorescent material
Weight.....approximately 1 pound

RELATIONSHIP OF PARTS: Used with:

Four electrical wheel and flap position transmitters...A. E. Reference Number 60-3153.

ARMY

A. E. REFERENCE NUMBER: 60-3151

SPECIFICATIONS:

Detail.....AN-P-5
Superseded.....94-27375

AN DRAWING NUMBER: AN5780

AN PART NUMBER: AN5780-2

TYPE DESIGNATION: Former Type A-3

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN5780-2

SPECIFICATIONS: Detail.....AN-P-5

AN DRAWING NUMBER: AN5780

AN PART NUMBER: AN5780-2

F. S. S. C. NUMBER: 88-I-1890

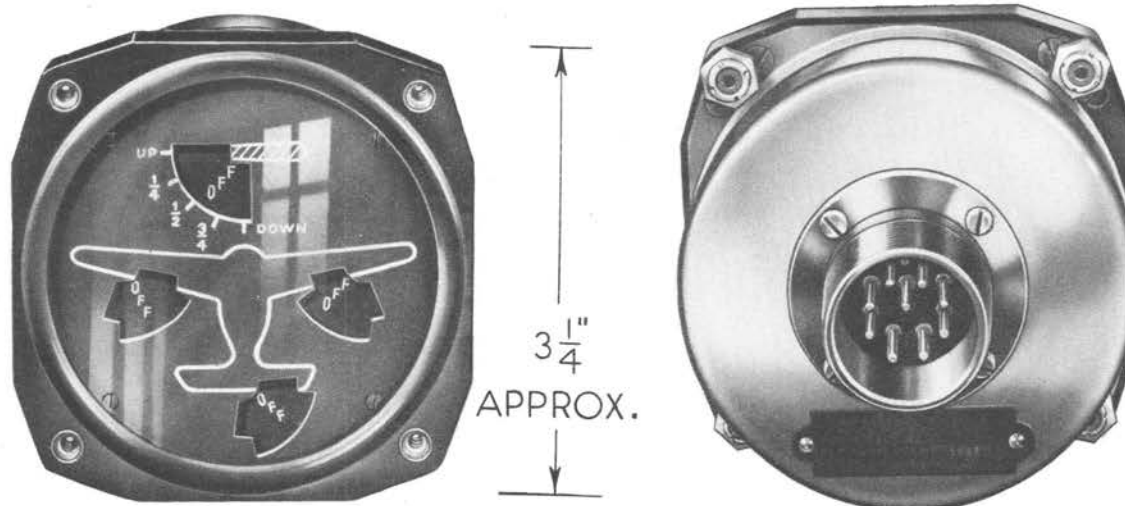
PROCUREMENT STATUS: Standard—
G. F. E. Order through A. S. O. by
F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	Model 882, Type 8	108370	A-N	6000228514-5		
	Model 882, Type 10	111602	A-N			
General Electric Co.	8DJ17AAK		A-B	6000228512	106A/1126	A. A. F. Type A-3.
	8DJ17AAW		A	6000228514		
	8DJ17AAT		N			



POSITION INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—ELECTRICAL WHEEL AND FLAP POSITION

AN 5780-1

FORMER ARMY TYPE A-3

F. S. S. C. NUMBER 88-I-1895

NAMES: Electrical wheel and flap position indicator
Indicator, position, wheel and flap
Indicator, flap and wheel position (British)

Indicator—undercarriage and flap retraction
(British)

DESCRIPTION: This indicator is for tail wheel installation. It indicates to the pilot whether the flaps are up, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$, or fully on, and whether the wheels are up or down and locked or unlocked. Indications are shown on a dial representing the airplane, and are produced through electrical impulses received from four transmitters, one mounted at each main landing wheel, one at the tail wheel, and one at the flaps.

CHARACTERISTICS:

Dial size..... $2\frac{3}{4}$ inches diameter
Dimensions..... approximately $3\frac{1}{4}$ by $3\frac{1}{4}$ by $2\frac{3}{4}$ inches
Markings..... fluorescent material
Weight..... approximately 1 pound

RELATIONSHIP OF PARTS: Used with:

Four electrical wheel and flap position transmitters..... A. E. Reference Number 60-3153.

ARMY

A. E. REFERENCE NUMBER: 60-3152

SPECIFICATIONS:

Detail..... AN-P-5
Superseded..... 94-27375

AN DRAWING NUMBER: AN5780

AN PART NUMBER: AN5780-1

TYPE DESIGNATION: Former type A-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail..... AN-P-5

AN DRAWING NUMBER: AN5780

AN PART NUMBER: AN5780-1

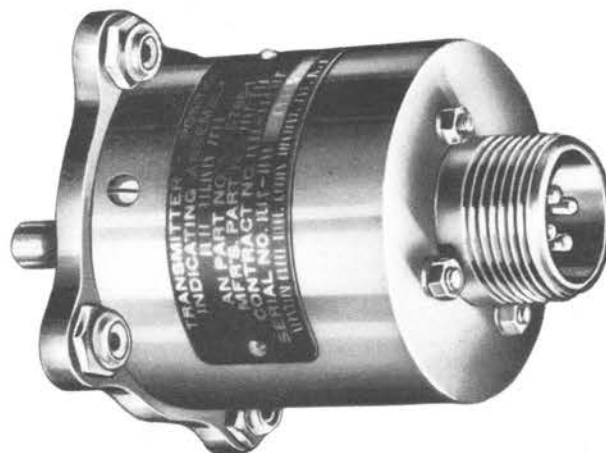
F. S. S. C. NUMBER: 88-I-1895

PROCUREMENT STATUS: Standard—

G. F. E.—Order through A. S. O. by
F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	Model 882, Type 7	108369	A-N-B	6000228514-4		106A/1340	
	Model 882, Type 9	111601	A-B			106A/1340	
General Electric Co.	8DJ17AAL	4149660	A-B	6000228513	05-55A-2	106A/1340	A. A. F. Type A-3.
	8DJ17AAD	4149660	A-N-B		05-55A-2	106A/1340	



TRANSMITTER—ELECTRICAL WHEEL AND FLAP POSITION

AN 5785-1 FORMER ARMY TYPE A-3 F. S. S. C. NUMBER 88-T-2650

NAMES: Electrical wheel and flap position transmitter Transmitter, position, wheel and flap

DESCRIPTION: The AN5785-1 transmitter originates the impulses which actuate the indicator in the cockpit. Four are required for each installation; one at each of the main landing wheels, one at the tail (or nose) wheel and one at the flaps.

CHARACTERISTICS:

Dimensions approximately 1 7/8 inches diameter by 2 5/8 inches long
Weight approximately 1 pound

RELATIONSHIP OF PARTS: Used with:

Electrical wheel and flap position indicator A. E. Reference Numbers 60-3151 or 60-3152

ARMY

A. E. REFERENCE NUMBER: 60-3153

SPECIFICATIONS:

General AN-P-5
Superseded 94-27375

AN OR A. A. F. DRAWING NUMBER: AN5785

AN PART NUMBER: AN5785-1

TYPE DESIGNATION: Former type A-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

General AN-P-5

AN DRAWING NUMBER: AN5785

AN PART NUMBER: AN5785-1

F. S. S. C. NUMBER: 88-T-2650

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.		108525	A-N-B	6000437675		106A/1146	
General Electric Co.	8TJ19AAF	4149608	A-B	6000435483	05-55A-2	106A/1146	A. A. F. Type A-3.
	8TJ19AAK	4149608	A-B	6000435484		106A/1146	
	8TJ19AAB	4149608	A-N-B		05-55A-2	106A/1146	A. A. F. Type A-3.



TACHOMETERS

Aircraft engine tachometers indicate the number of revolutions per minute at which the engine crankshaft is revolving. They are divided into two general classes, mechanical tachometers and electrical tachometers. The mechanical types are single instruments mounted on the instrument panel and connected directly, by a flexible driveshaft, to the engine tachometer drive. The electrical types are remote indicating instruments, with a generator or autosyn transmitter attached to the engine tachometer drive and connected electrically to the indicator on the instrument panel.

There are three kinds of mechanical tachometers, centrifugal, magnetic, and chronometric, of which the chronometric only is now used by the Army.

A centrifugal tachometer consists of a flyweight unit spun by a rotating shaft. As the speed of the engine increases, centrifugal force moves the flyweights outward. This movement of the flyweights is proportional to the shaft's speed, and is measured and translated into revolutions per minute on the indicator dial by mechanical linkage.

A magnetic tachometer consists of a magnet turning inside a metal drum. The turning of the magnet produces an eddy current drag, causing the drum to turn. The drum is connected to the indicator hand, and is restrained in its rotation by a calibrating spring, so that the amount of rotation is proportionate to the speed of the magnet, and, therefore, to the speed of the engine.

A chronometric tachometer consists of a timing mechanism, a counter, and a coordinating mechanism. The counter counts the revolutions of the flexible shaft within the period of time set up by the timing mechanism, and the coordinating mechanism indicates on the dial the revolutions per minute.

Electrical tachometers are of several types. One employs a generator, connected to the crankshaft of the engine, and an indicator which is essentially a volt-

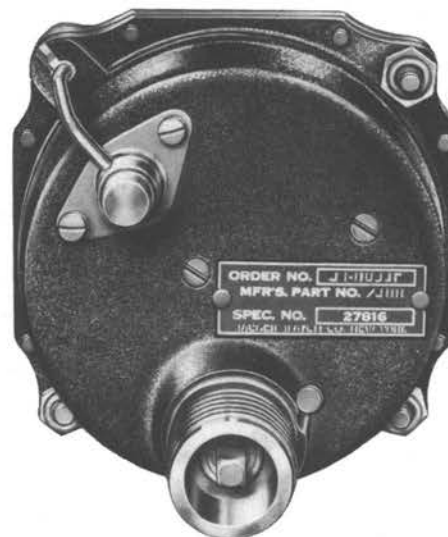
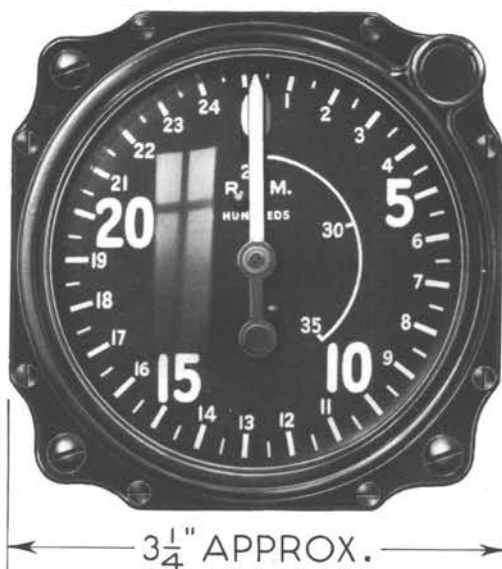
meter. The generator may be either the direct current type or the single phase alternating current type. When the latter is used, the current is rectified to direct current in the indicator. Another type uses a three phase alternating current generator and an indicator containing a synchronous motor. This motor runs in synchronism with the generator, and drives a magnet assembly consisting of two plates, each carrying five small magnets. A disk, mounted on a shaft, is placed between the magnet plates, and is restrained from rotating by a spiral spring. As the magnet spins, it produces a torque which tends to turn the disk. The pointer, connected to the same shaft as the disk, indicates how far the disk deflects.

The autosyn transmitter consists of a centrifugal flyweight governor unit and an autosyn motor. The governor unit is driven from the engine tachometer drive by a flexible shaft, and is composed of three flyweights. One end of this unit is fixed to the transmitter spindle, and the other, connected to a plunger, is free to travel along the spindle under the action of the flyweights moving outward. Movement of the plunger causes the rotor of the autosyn transmitter to rotate. This change in the position of the transmitter rotor induces a like change in the position of the indicator rotor, and the pointer on the dial indicates this change.

Aircraft engines procured by the Army and Navy are equipped with one of two types of tachometer mounting pads and drives. Type I is a screw type mount, and type II is a square pad with four mounting studs. To correspond with these, the tachometer transmitter may have either a screw mount or a pad mount. The flexible shaft used for mechanical tachometers is attached to a screw mount. On engines where a flexible shaft is to be used, pad mounts can be adapted to a type I mount by an outlet adapter AN4041. This adapter should never be used, however, to adapt a pad mount to a screw-mounting generator. The adapter is not designed for this purpose, and will break off when subjected to vibration.



TACHOMETERS INSTRUMENTS—ENGINE



TACHOMETER—CHRONOMETRIC ARMY TYPE C-7

NAMES: Chronometric tachometer
Engine speed indicator
Shaft-driven tachometer

Tachometer
Tachometer assembly
Tachometer—engine speed indicator

DESCRIPTION: The Army type C-7 tachometer is a mechanical tachometer which is connected directly to the engine tachometer drive.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 3 1/8 inches
Weight	approximately 1 1/4 pounds
Range	0 to 3500 revolutions per minute
Dial	2 3/4 inches diameter
Lighting	individual three volt rim lamp
Dial markings	Radioactive luminous

RELATIONSHIP OF PARTS: Used with: Army type A-1 (drawing number OK-38) or A-2 (drawing number AN9205) tachometer drive shafts. These flexible shafts are furnished by the airplane contractor.

ARMY

A. E. REFERENCE NUMBER: 61-8500

SPECIFICATIONS:

General	94-27141-H
Detail	94-27816
Superseded	27816

AN OR A. A. F. DRAWING NUMBER: None

TYPE DESIGNATION: C-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army types C-9 and C-9A, A. E. Reference Number 61-8650.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

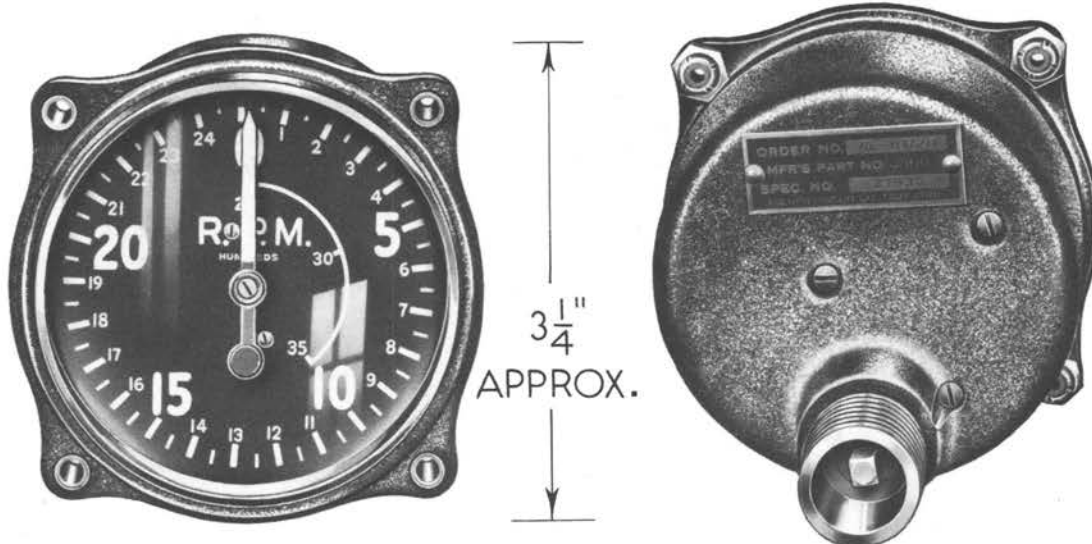
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Type Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Jaeger Watch Co., Inc.	C-7*	2300	A-B	6100359525	AN05-5C-1	106A/906	
	C-9*	3800	A-B	6100359770	AN05-5C-1	106A/843	No individual rim lamp. Phosphorescent markings.
	C-9A*	4700	A	6100359775	AN05-5C-1	None	No individual rim lamp. Fluorescent markings.
	C-11*	4770	A-B	6100359820	AN05-5C-1	106A/1086	0 to 4500 rpm. No individual rim lamp. Fluorescent markings.

*A. A. F. types.



TACHOMETERS INSTRUMENTS—ENGINE



TACHOMETER—CHRONOMETRIC

ARMY TYPE C-9A

FORMER ARMY TYPE C-9

NAMES: Chronometric tachometer
Chronometer tachometer
Engine speed indicator
Shaft-driven tachometer

Tachometer
Tachometer assembly
Tachometer—engine speed indicator

DESCRIPTION: The Army type C-9A tachometer is a mechanical tachometer which is connected directly to the engine tachometer drive.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 3 1/8 inches
Weight	approximately 1 1/4 pounds
Range	0 to 3500 R.P.M.
Dial	2 3/4 inches diameter
Lighting	see chart

RELATIONSHIP OF PARTS: Used with: Army type A-1 (drawing number OK-38) or A-2 (drawing number AN9205) tachometer drive shaft. These flexible shafts are furnished by the airplane contractor.

ARMY

A. E. REFERENCE NUMBER: 61-8650

SPECIFICATIONS:

General	94-27141-H
Detail	94-27930

TYPE DESIGNATION: C-9A. Former Army type C-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-11, A. E. Reference Number 61-8660.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this Army item.

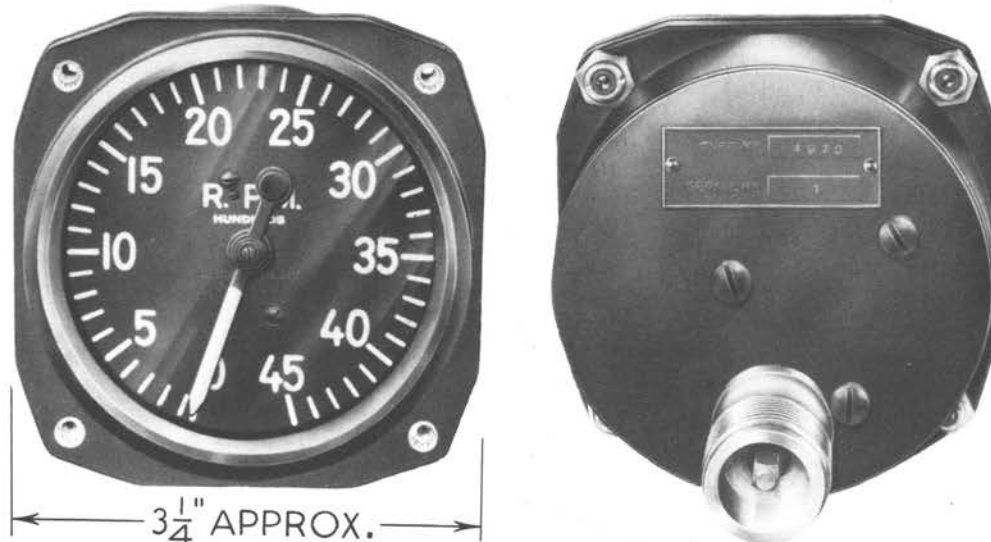
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Type Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Jaeger Watch Co., Inc.	C-9*	3800	A-B	6100359770	AN05-5C-1	106A/843	Radioactive luminous and phosphorescent markings.
	C-9A*	4700	A	6100359775	AN05-5C-1		Fluorescent markings.
	C-11*	4770	A-B	6100359820	AN05-5C-1	106A/1086	0 to 4500 rpm. Fluorescent markings.

*A. A. F. type.



TACHOMETERS INSTRUMENTS—ENGINE



TACHOMETER—CHRONOMETRIC ARMY TYPE C-11

NAMES: Chronometric tachometer
Chronometer tachometer
Engine speed indicator
Shaft-driven tachometer

Tachometer
Tachometer assembly
Tachometer—engine speed indicator

DESCRIPTION: The Army type C-11 tachometer is a mechanical tachometer which is directly connected to the engine tachometer drive.

CHARACTERISTICS:

Range.....	0 to 4500 R.P.M.
Dial.....	2 3/4 inches diameter
Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 inches
Weight.....	approximately 1 1/4 pounds
Lighting.....	Fluorescent markings

RELATIONSHIP OF PARTS: Used with: Army type A-1 (drawing number OK-38) or A-2 (drawing number AN9205) tachometer drive shaft. These flexible shafts are furnished by the airplane contractor.

ARMY

A. E. REFERENCE NUMBER: 61-8660

SPECIFICATIONS:

General.....	94-27141-H
Detail.....	94-27353
Superseded.....	27353

TYPE DESIGNATION: C-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army type C-9 and C-9A, tachometers. A. E. Reference Number 61-8650.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this Army item.

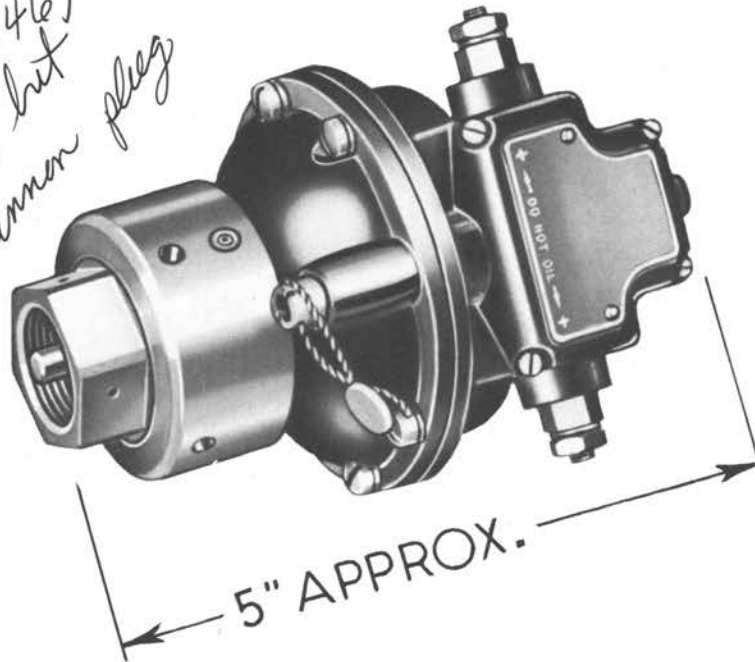
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Type Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Jaeger Watch Co., Inc.	C-11*	4770	A-B	6100359830	AN 05-5C-1	106A/1086	
	C-9*	3800	A-B	6100359770	AN 05-5C-1	106A/843	0 to 3500 rpm only. Radioactive luminous and phosphorescent markings.
	C-9A*	4700	A	6100359775	AN 05-5C-1		0 to 3500 rpm only.

*AAF type.



*All
724-C (66846)
for same type but
with 2 pin cannon plug*



GENERATOR—SCREW MOUNT TACHOMETER

ARMY TYPE E-4

NAMES: Screw mount tachometer generator
Generator assembly
Generator assembly—tachometer
Generator assembly—tachometer (single)

Magneto assembly
Magneto generator
Tachometer generator
Tachometer magneto

DESCRIPTION: The Army type E-4 screw mount tachometer generator is a direct current generator, capable of operating two E-4 tachometer indicators.

CHARACTERISTICS:

Weight.....approximately 2¼ pounds
Dimensions.....approximately 4 inches diameter by 5 inches long
Electrical connector.....terminal studs
Mount connection.....swivel nut

RELATIONSHIP OF PARTS: Used with Army type E-4 tachometer indicator, A. E. Reference Number 61-8677. An Army type A-4 engine synchronism indicator, A. E. Reference Number 61-4600, can be used with two of these generators to indicate the difference in R.P.M. of two engines.

ARMY

A. E. REFERENCE NUMBER: 61-8676

SPECIFICATIONS:

General.....94-27240-C
Detail.....27817

MANUFACTURER'S DRAWING AND PART NUMBER: Weston Electrical Instrument Corporation
76548 Model 544, Type B-6.

TYPE DESIGNATION: E-4

A. S. C. STOCK NUMBER: 6100162250

TECHNICAL ORDER NUMBER: 05-5B-1

PRODUCTION STATUS: Not under procurement for initial installation.

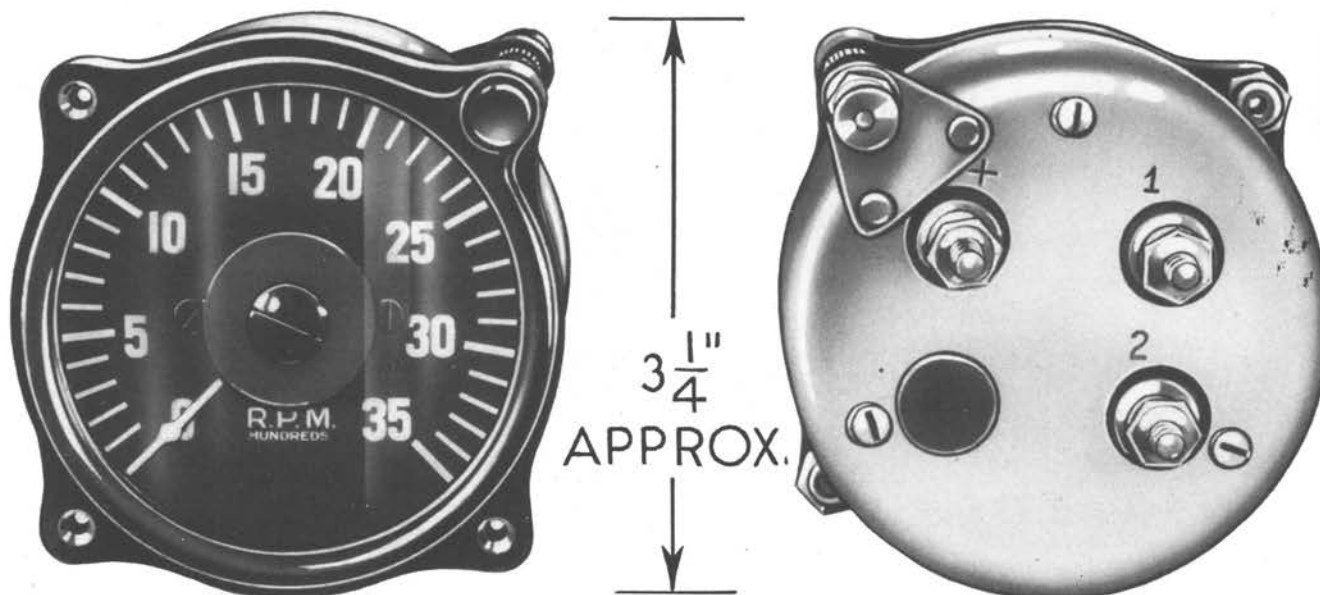
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/546

**INDICATOR—TACHOMETER****ARMY TYPE E-4**

NAMES: Tachometer indicator
Engine speed indicator
Electric tachometer

Indicator assembly
Indicator assembly—tachometer
Indicator assembly—tachometer (single)

DESCRIPTION: The Army type E-4 tachometer indicator is a direct current voltmeter type instrument, which registers the voltage output of an Army type E-4 tachometer generator, and translates this voltage into terms of revolutions per minute of the engine speed.

CHARACTERISTICS:

Range.....0 to 3500 revolutions per minute
Dial.....2¾ inches diameter
Lighting.....individual; single wire, 3-volt lamp
Markings.....radioactive luminous material
Weight.....approximately 1¾ pounds
Dimensions.....approximately 3¼ by 3¼ by 3¼ inches
Electrical connector.....terminal studs

RELATIONSHIP OF PARTS:

Used with Army type E-4 screw mount tachometer generator, A. E. Reference Number 61-8676.

ARMY

A. E. REFERENCE NUMBER: 61-8677

SPECIFICATIONS:

General.....94-27240-C
Detail.....27817

TYPE DESIGNATION: E-4

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation

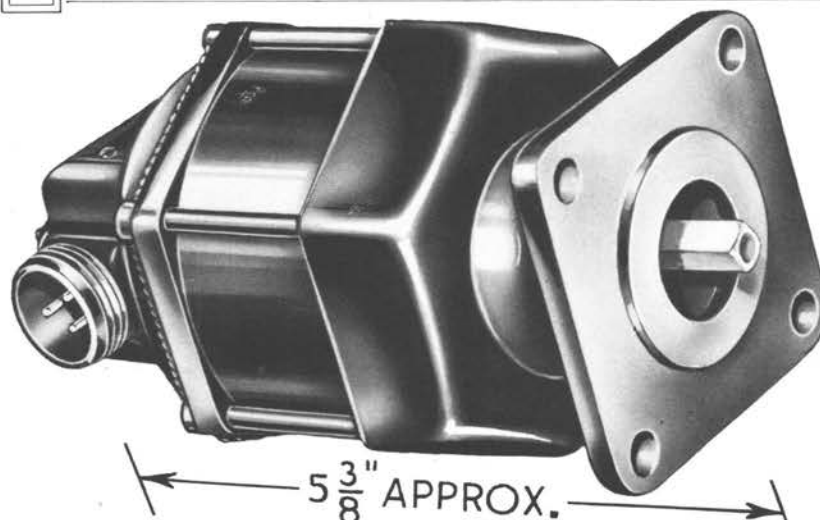
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing and Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Weston Electrical Instrument Corp.	89567	A-B	6100240250	05-5B-1	106A/545
	86864	A	6100240000	05-5B-1	



GENERATOR—PAD MOUNT TACHOMETER

AN 5531-1 FORMER ARMY TYPES E-9, E-9A, E-13, E-14 F. S. S. C. NUMBER 88-G-1335

NAMES: Pad mount tachometer generator
Generator
Generator—tachometer
Magneto generator
Generator assembly tachometer pad

Generator—electric tachometer
Generator—stud mount
Tachometer generator—pad mount
Generator assembly—tachometer

DESCRIPTION: This pad mount tachometer generator consists of a four-pole permanent magnet rotor and a three-phase stator winding. As the engine speed changes, the output frequency of the generator changes, causing a corresponding change in the speed of the indicator's synchronous motor. The electrical connector is at right angles to the drive shaft.

CHARACTERISTICS:

Weight.....approximately 2 $\frac{3}{4}$ pounds
Dimensions.....approximately 5 $\frac{3}{4}$ by 3 $\frac{1}{8}$ by 3 $\frac{1}{2}$ inches
Electrical connector.....AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with tachometer indicator, A. E. Reference Number 61-8703, or dual tachometer indicator, A. E. Reference Number 61-8802. When used with dual indicator, two generators are required.

ARMY A. E. REFERENCE NUMBER: 61-8701
SPECIFICATIONS:

Detail.....AN-G-16
Superseded.....94-27371, 94-27950A (E-9A), 94-27950 (E-9),
94-27354 (E-13), 94-27355 (E-14)

AN PART NUMBER: AN5531-1

AN DRAWING NUMBER: AN5531

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army Types E-9A, E-9, E-13, E-14 pad mount generators.

SHIPPING DATA: Shipped as a complete unit.

NAVY SPECIFICATIONS:

Detail.....AN-G-16
Superseded.....BuAer Spec. SQ.-109

AN DRAWING NUMBER: AN5531

AN PART NUMBER: AN5531-1

F. S. S. C. NUMBER: 88-G-1335

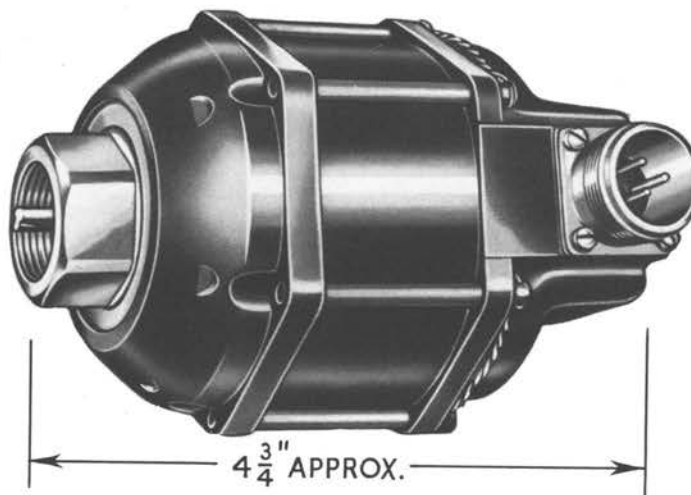
TECHNICAL NOTE NUMBER: 9-41

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by F. S. S. C. number

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model (X)	
General Electric Co.	2CM58AL	A-B	6100163150	05-5D-1	106A/1324	X	
Kollsman Instrument Division	655G-01	A-B	6100163240	05-5E-1	106A/1324		
	655G-02	A-B	6100163250		106A/942		Electrical connector plug parallel to drive shaft.*
	770G-01	A-N-B			106A/1324	X	

*To be considered interchangeable if this feature is adaptable to installation concerned.

**GENERATOR—SCREW MOUNT TACHOMETER****AN5531-2****FORMER ARMY TYPES E-9 AND E-9A****F. S. S. C. NUMBER 88-G-1330**

NAMES: Screw mount tachometer generator
Magnet assembly
Magnet generator
Screw mount tachometer

Generator assembly tachometer screw
Generator—electric tachometer
Tachometer generator—screw mount

DESCRIPTION: This screw mount tachometer generator consists of a four-pole permanent magnet rotor and a three-phase stator winding. As the engine speed changes, the output frequency of the generator changes, causing a corresponding change in the speed of the indicator's synchronous motor. The electrical connector is at right angles to the drive shaft.

CHARACTERISTICS:

Weight.....approximately 2 $\frac{3}{4}$ pounds
Dimensions.....approximately 4 $\frac{3}{4}$ by 3 $\frac{1}{8}$ by 3 $\frac{1}{2}$ inches
Electrical connector.....AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with tachometer indicator, A. E. Reference Number 61-8703 or A. E. Reference Number 61-8777, or dual tachometer indicator, A. E. Reference Number 61-8802. When used with dual indicator, two generators are required.

ARMY

A. E. REFERENCE NUMBER: 61-8702

SPECIFICATIONS:

Detail.....AN-G-16
Superseded.....94-27950A (E-9A),
94-27950 (E-9), 94-27371

AN DRAWING NUMBER: AN5531-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.
Supersedes Army types E-9A and E-9
screw mount generators.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN5531-2

SPECIFICATIONS:

Detail.....AN-G-16
Superseded.....BuAer Spec. SQ-109A

AN DRAWING NUMBER: AN5531

F. S. S. C. NUMBER: 88-G-1330

TECHNICAL NOTE NUMBER: 9-41

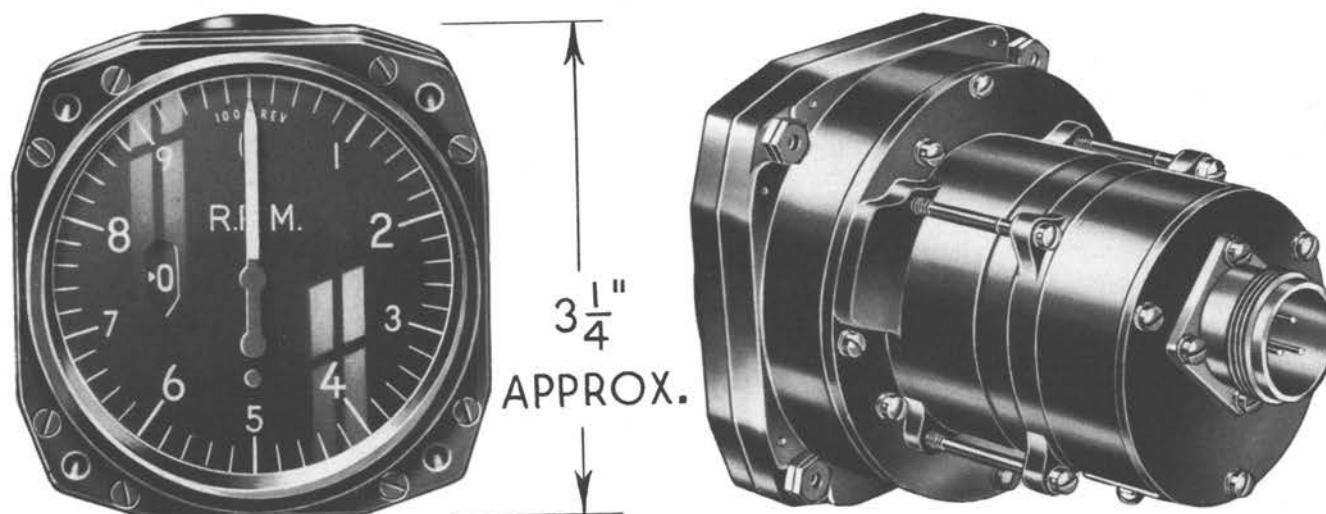
PROCUREMENT STATUS: Standard—
G. F. E. order through A. S. O. by
F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model (X)	Remarks
General Electric Co.	2CM5BAM	A-B	6100163275	05-5D-1	106A/1355	X	
	2CM7AAA	A-B	6100163280	05-5D-1	106A/1431	X	
Kollsman Instrument Division	677G-01	A-B	6100163263	05-5E-1	106A/1355		
	677G-02	A	6100163264	05-5E-1			Electrical connector plug parallel to drive shaft.*
	774G-01	A-N-B			106A/1355	X	

* To be considered interchangeable if this feature is adaptable to installation concerned.

TACHOMETERS INSTRUMENTS—ENGINE



INDICATOR—TACHOMETER

ARMY TYPE E-9A

FORMER ARMY TYPE E-9

NAMES: Tachometer indicator
Engine speed indicator
Indicator assembly tachometer (single)
Indicator—electric tachometer

Tachometer—engine speed indicator
Sensitive electric tachometer indicator
Electric tachometer

DESCRIPTION: The Army type E-9A tachometer indicator consists of a three phase alternating current synchronous motor and an indicating element. By using the magnetic drag principle, the speed of the synchronous motor is transmitted to the indicating element, which registers it on a dial marked in revolutions per minute.

CHARACTERISTICS

Range.....0 to 3500 R.P.M. in $3\frac{1}{2}$ revolutions of the pointer
Dial..... $2\frac{3}{4}$ inches diameter
Markings.....fluorescent luminescent
Weight.....approximately $1\frac{1}{4}$ pounds
Dimensions.....approximately $3\frac{1}{4}$ by $3\frac{1}{4}$ by 5 inches
Electrical connector.....AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with pad mount tachometer generator, A. E. Reference Number 61-8701, or screw mount tachometer generator, A. E. Reference Number 61-8702.

ARMY

A. E. REFERENCE: 61-8703

SPECIFICATIONS:

General.....94-27370
Detail.....94-27950A
Superseded.....94-27950

TYPE DESIGNATION: E-9A

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by tachometer indicator, AN5530-1, A. E. Reference Number 61-8777.

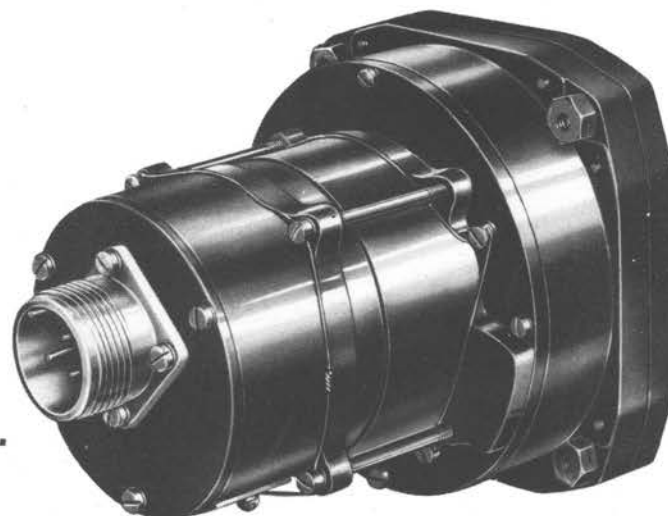
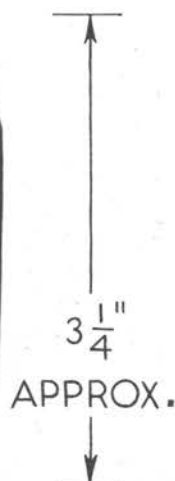
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Type or Model Identification	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
General Electric Co.	8DJ13AAH	A-B	6100241270	05-5D-1	106A/1139	
	8DJ13AAS	A-B	6100241300	05-5D-1	106A/1015	Phosphorescent scale marking.
	8DJ13AAW	A	6100241303	05-5D-1		Phosphorescent scale marking.
	8DJ13ABN	A-B	6100238825	05-5D-1	106A/1372	Army type E-13, 0 to 4500 rpm. Phosphorescent scale marking.
Kollsman Instrument Division	656K-03	A-B	6100241280	05-5E-1	106A/872	Army type E-9, Radioactive scale markings.
	590BK-01	B-C			106A/922	
	590SD-01					
	771K-03	A				Army type E-13, 0 to 4500 rpm. Radioactive scale markings.
	771K-01	C				

**INDICATOR—TACHOMETER****AN 5530-1 FORMER ARMY TYPE E-13 F. S. S. C. NUMBER 88-I-2385**

NAMES: Tachometer indicator
Engine speed indicator
Indicator—electric tachometer

Indicator assembly—tachometer (single)
Electric tachometer

DESCRIPTION: AN5530-1 tachometer indicator consists of a three-phase alternating current synchronous motor and an indicating element. By using the magnetic drag principle, the speed of the synchronous motor is transmitted to the indicating element, which registers on a dial marked in engine crankshaft revolutions per minute.

CHARACTERISTICS:

Markings.....fluorescent
Weight.....approximately 1 1/4 pounds
Range.....0 to 4500 revolutions per minute in 330 degrees pointer travel
Dial.....2 3/4 inches diameter
Dimensions.....approximately 3 1/4 by 3 1/4 by 5 inches
Electrical connector.....AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with: Pad mount tachometer generator, A. E. Reference Number 61-8701, or screw mount tachometer generator, A. E. Reference Number 61-8702.

ARMY

A. E. REFERENCE NUMBER: 61-8777

SPECIFICATIONS:

General.....94-27370
Detail.....AN-I-3
Superseded.....94-27354

AN OR A. A. F. DRAWING NUMBER: AN5530

AN PART NUMBER: AN5530-1

TYPE DESIGNATION: Former type E-13

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.
Supersedes Army type E-9A tachometer indicator, A. E. Reference Number 61-8703.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN5530-1

SPECIFICATIONS: Detail.....AN-I-3

AN OR N. A. F. DRAWING NUMBER:
AN5530

A. S. O. OR F. S. S. C. STOCK NUMBER:
88-I-2385

PROCUREMENT STATUS: Standard—
G. F. E.—Order through A. S. O. by
F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Used By	Army Technical Order Number	Remarks
Kollsman Instrument Division	771K-03	A-N		
	771K-01	C		
General Electric Co.	8DJ13ABN	A	05-5D-1	Phosphorescent markings.

TYPE INTERCHANGEABILITY

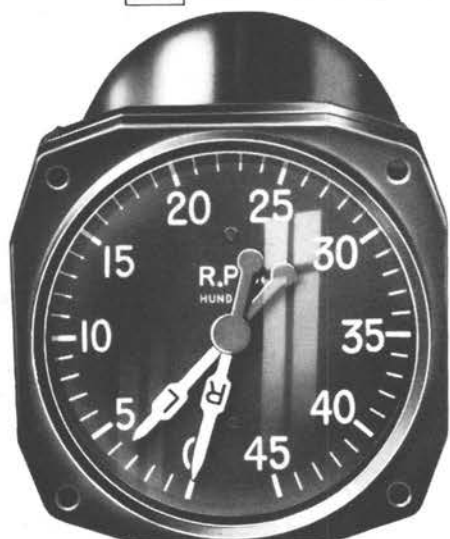
A. A. F. Type
E-9A

Remarks

0 to 3500 rpm; phosphorescent markings.



TACHOMETERS INSTRUMENTS—ENGINE



INDICATOR—DUAL

AN5530-2 FORMER ARMY TYPE E-14

TACHOMETER

F. S. S. C. NUMBER 88-I-2375

NAMES: Dual tachometer indicator
Indicator assembly—tachometer (dual)
Tachometer indicator

Indicator assembly—tachometer
Indicator—electric tachometer
Electric tachometer

DESCRIPTION: AN5530-2 dual tachometer indicator consists of two synchronous motors. Two indicating elements interpret the speed of the synchronous motors in terms of engine speed. This indicator shows the speed of two engines simultaneously.

CHARACTERISTICS:

Dimensions approximately 3 1/4 by 3 1/4 by 5 inches
Weight approximately 2 pounds
Range 0 to 4500 revolutions per minute in 330 degrees pointer travel
Dial 2 3/4 inches diameter
Lighting fluorescent markings
Electrical connectors AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with: Two pad mount tachometer generators, A. E. Reference Number 61-8701, or two screw mount tachometer generators, A. E. Reference Number 61-8702.

ARMY

A. E. REFERENCE NUMBER: 61-8802

SPECIFICATIONS:

General 94-27370
Detail AN-I-3
Superseded 94-27355

AN OR A. A. F. DRAWING NUMBER: AN5530

AN PART NUMBER: AN5530-2

TYPE DESIGNATION: Former type E-14

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail AN-I-3

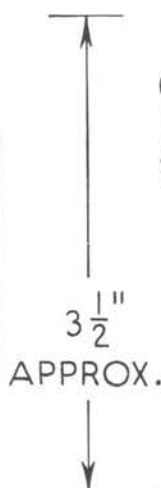
AN OR N. A. F. DRAWING NUMBER: AN5530

F. S. S. C. STOCK NUMBER: 88-I-2375

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by F. S. S. C. Number

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Type and/or Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Remarks
General Electric Co.	8DJ19AAB	V-4149384	A	6100241545	
Kollsman Instrument Division	751K-02		N		Equivalent to AN5530-3; F.S.S.C. Number 88-I-2380; has built-in synchroscope.



INDICATOR—DUAL TACHOMETER ARMY TYPE E-10

NAMES: Dual tachometer indicator
Autosyn tachometer
Autosyn dual indicator

Engine speed indicator
Indicator assembly—Tachometer

DESCRIPTION: The type E-10 dual tachometer indicator is an electrically-driven self-synchronous instrument, used to indicate the speed of two engine cranks in revolutions per minute.

CHARACTERISTICS:

Range.....400 to 3500 revolutions per minute
Dial.....2 $\frac{3}{4}$ inches diameter
Lighting.....fluorescent markings
Weight.....approximately 5 pounds
Dimensions.....approximately 5 $\frac{5}{16}$ by 3 $\frac{1}{2}$ by 3 $\frac{1}{2}$ inches

RELATIONSHIP OF PARTS: Used with:

2 Army type E-10 tachometer transmitters.....A. E. Reference Number 61-8727

ARMY

A. E. REFERENCE NUMBER: 61-8726

SPECIFICATIONS: Detail.....94-27972

TYPE DESIGNATION: E-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

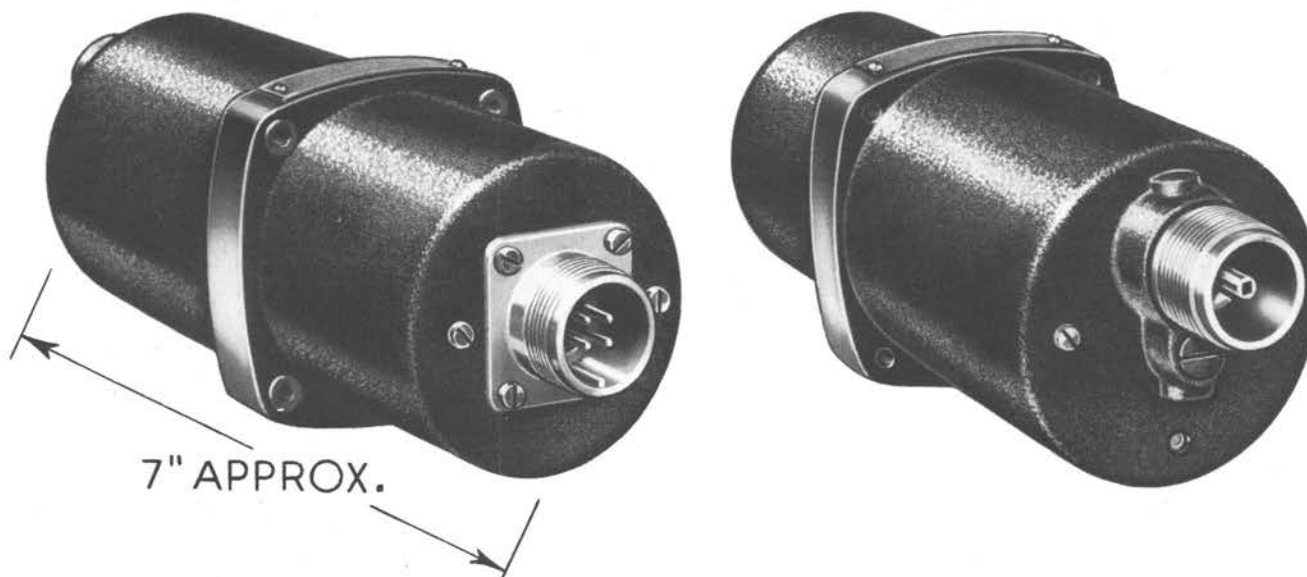
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Div.	6007-28C-14A	A-B	6100241308	05-55B-1	106A/786
	6007-28C-7A	A-B	6100241310	05-55B-1	106A/786
	6007-28A-1-A	B-C	6100241305		106A/200
	6007-28B-6-A	B-C	6100241307		106A/201
	6007-28E-7-A	C	6100241320		



TRANSMITTER—TACHOMETER

ARMY TYPE E-10

NAMES: Tachometer transmitter
Autosyn transmitter

Autosyn tachometer transmitter

DESCRIPTION:

The type E-10 tachometer transmitter consists of a mechanical (governor) type mechanism, connected through a linkage to an autosyn type transmitter. The assembly is used with an autosyn type indicator.

CHARACTERISTICS:

Weight.....approximately 1 $\frac{1}{4}$ pounds
Dimensions.....approximately 2 $\frac{1}{4}$ by 2 $\frac{1}{4}$ by 7 inches

RELATIONSHIP OF PARTS: Two Army type E-10 transmitters are required with each Army type E-10 tachometer indicator, A. E. Reference Number 61-8726.

ARMY

A. E. REFERENCE NUMBER: 61-8727

SPECIFICATIONS: Detail.....94-27972

TYPE DESIGNATION: E-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-55B-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, approximately 25 transmitters to a carton.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Pioneer Instrument Division	4350-2A-A2	A	6100438780	
	4350-2A-B2	A-B-C	6100438790	106A/202



GENERATOR—SCREW MOUNT TACHOMETER ARMY TYPE E-12

NAMES: Screw mount tachometer generator
Electric tachometer
Generator
Generator Assembly—tachometer axial
Magneto assembly

Magneto generator
Tachometer generator
Generator assembly—tachometer
Transmitter—Tachometer

DESCRIPTION: This Army type E-12 screw mount tachometer generator is a single-phase alternating current generator. Its electrical connector is mounted parallel to the drive shaft, and it has sufficient capacity to operate two tachometer indicators.

CHARACTERISTICS:

Weight.....approximately 2 pounds
Dimensions.....approximately 5 by 3 by 3 inches
Electrical connector.....AND10066-12S-3P

RELATIONSHIP OF PARTS: Used with:

One or two Army type E-12 tachometer indicators, A. E. Reference Number 61-8753

ARMY

A. E. REFERENCE NUMBER: 61-8751

SPECIFICATIONS:

General.....94-27240-C
Detail.....94-27311
Superseded.....27311

TYPE DESIGNATION: E-12

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

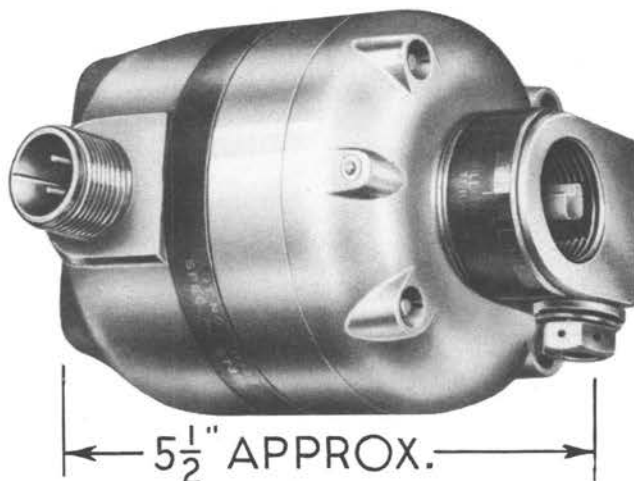
MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	102594	A-B	6100163290	05-5B-2	106A/1123	Axial electrical connection, A. E. Reference Number 61-8751. See Note 1 and 2.
	105290	A	6100163293	05-5B-2		Right angle electrical connection, A. E. Reference Number 61-8752. See Note 1 and 2.

INTERCHANGEABILITY NOTE:

Note 1—These generators are dimensionally and functionally interchangeable and may be interchanged for each other; however, consideration must be given in individual installation to the different placement of the electrical connectors.

Note 2—These generators are not interchangeable with Weston commercial model 752, which is similar in appearance. The commercial model gives a much lower output.



GENERATOR—SCREW MOUNT TACHOMETER

ARMY TYPE E-12

NAMES: Screw mount tachometer generator
 Generator assembly—tachometer (right angle)
 Generator—electric tachometer

Generator—tachometer (right angle)
 Magneto assembly
 Magneto generator

DESCRIPTION: This Army type E-12 screw mount tachometer generator is a single-phase alternating current generator, designed for mounting on a type I tachometer mounting pad (drawing AND10005). This generator has its electrical connector mounted at right angles to the drive shaft, and has sufficient capacity to operate two tachometer indicators.

CHARACTERISTICS:

Weight.....approximately 2 pounds
 Dimensions.....approximately 5½ by 5 by 3 inches
 Electrical connector.....AND10066-12S-3P

RELATIONSHIP OF PARTS: Used with:

One or two Army type E-12 tachometer indicators, A.E. Reference Number 61-8753

ARMY

A. E. REFERENCE NUMBER: 61-8752

SPECIFICATIONS:

General.....94-27240-C
 Detail.....94-27311
 Superseded.....27311

TYPE DESIGNATION: E-12

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE

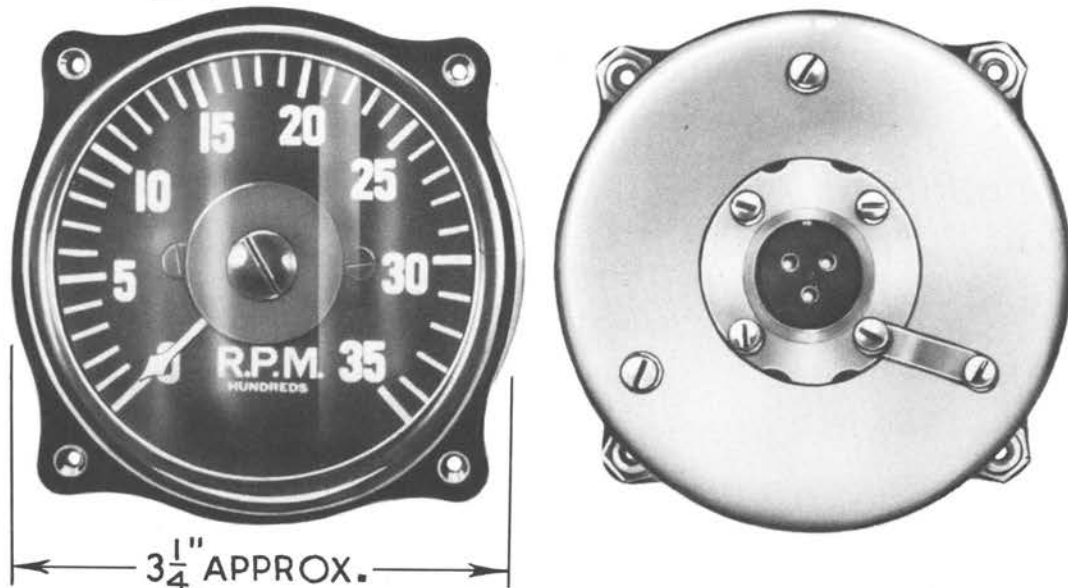
Models are used in services as noted in column 3
 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Weston Electrical Instrument Corp.	105290	A	6100163293	05-5B-2		See Notes.
	102594	A-B	6100163290	05-5B-2	106A/1123	Axial electrical connection. See Notes.

INTERCHANGEABILITY NOTE:

Note 1—These generators are dimensionally and functionally interchangeable, and may be interchanged for each other; however, consideration must be given in individual installation to the different placement of the electrical connectors.

Note 2—These generators are not interchangeable with Weston commercial model 752, which is similar in appearance.



INDICATOR—TACHOMETER
ARMY TYPE E-12

NAMES: Tachometer indicator
Engine speed indicator

Indicator assembly—tachometer

DESCRIPTION: The Army type E-12 tachometer indicator is a voltmeter type instrument, which registers the voltage output of an Army type E-12 single-phase alternating current generator. The alternating current is converted to direct current by means of a copper oxide rectifier contained in the indicator.

CHARACTERISTICS:

Range.....	0 to 3500 revolutions per minute
Dial.....	2 3/4 inches diameter
Lighting.....	fluorescent markings
Weight.....	approximately 1 1/4 pounds
Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 inches
Electrical connector.....	AND10066-14S-1P

RELATIONSHIP OF PARTS: Used with:

Army type E-12 tachometer generator, A. E. Reference Number 61-8751, or A. E. Reference Number 61-8752

ARMY

A. E. REFERENCE NUMBER: 61-8753

SPECIFICATIONS:

General.....	94-27240-C
Detail.....	94-27311
Superseded.....	27311

MANUFACTURER'S DRAWING AND PART NUMBER: Weston Electrical Instrument Corporation 102459

TYPE DESIGNATION: E-12

A. S. C. STOCK NUMBER: 6100241390

TECHNICAL ORDER NUMBER: 05-5B-2

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

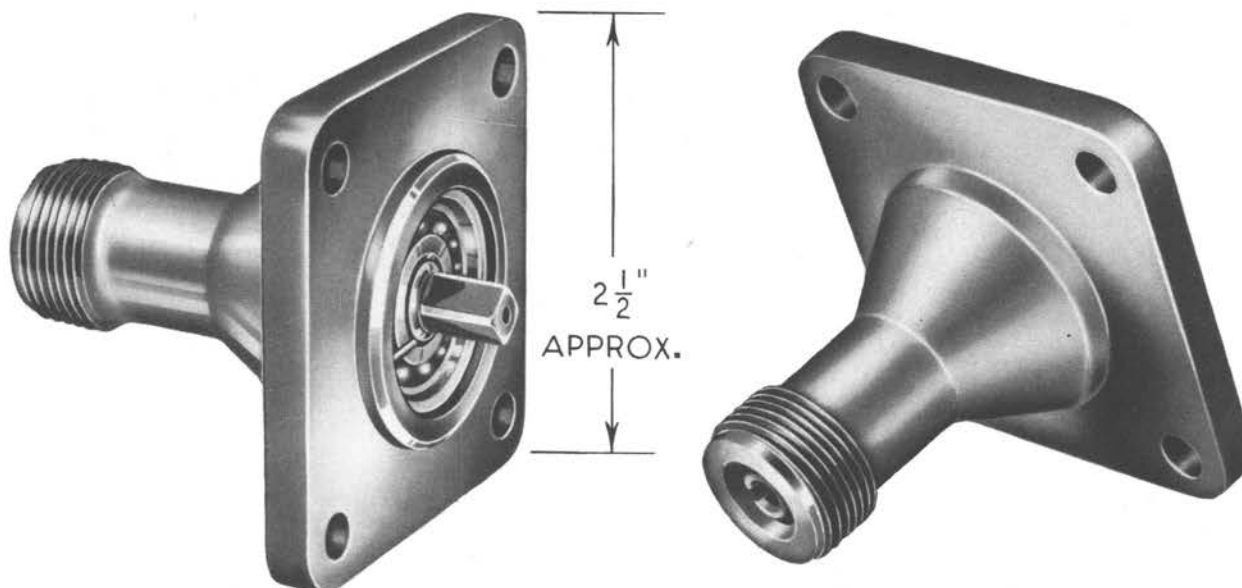
There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1111



TACHOMETERS INSTRUMENTS—ENGINE



ADAPTER—ENGINE TACHOMETER OUTLET

AN 4041 A. E. R. NUMBER 61-200 F. S. S. C. NUMBER 88-A-227

NAMES: Engine tachometer outlet adapter
Screw mount adapter
Tachometer adapter

Adapter assembly—type I to type II engine tachometer

DESCRIPTION: The adapter is used to attach a flexible tachometer shaft to an engine when the engine is provided with a pad or type II tachometer drive. One end of the adapter is mounted on the engine tachometer mounting pad by four equally spaced bolts; the other end has a screw outlet for attaching the tachometer shaft. The adapter is not designed to support a tachometer generator, and should not be used for this purpose.

CHARACTERISTICS:

Dimensions.....approximately 2½ by 2½ by 2¼ inches
Weight.....½ pound

RELATIONSHIP OF PARTS: Used with:

Army type C-7, A. E. Reference Number 61-8500, Army type C-9, A. E. Reference Number 61-8650, or Army type C-11, A. E. Reference Number 61-8660, when the engine drive is designed for a pad mounted tachometer generator.

ARMY

A. E. REFERENCE NUMBER: 61-200
AN DRAWING NUMBER: AN4041 (Army-Navy Standard Issue of Drawing Number 39B4243)
A. S. C. STOCK NUMBER: 6100002250
PRODUCTION STATUS: Not under procurement for initial installation.
SHIPPING DATA: Shipped as a complete unit.

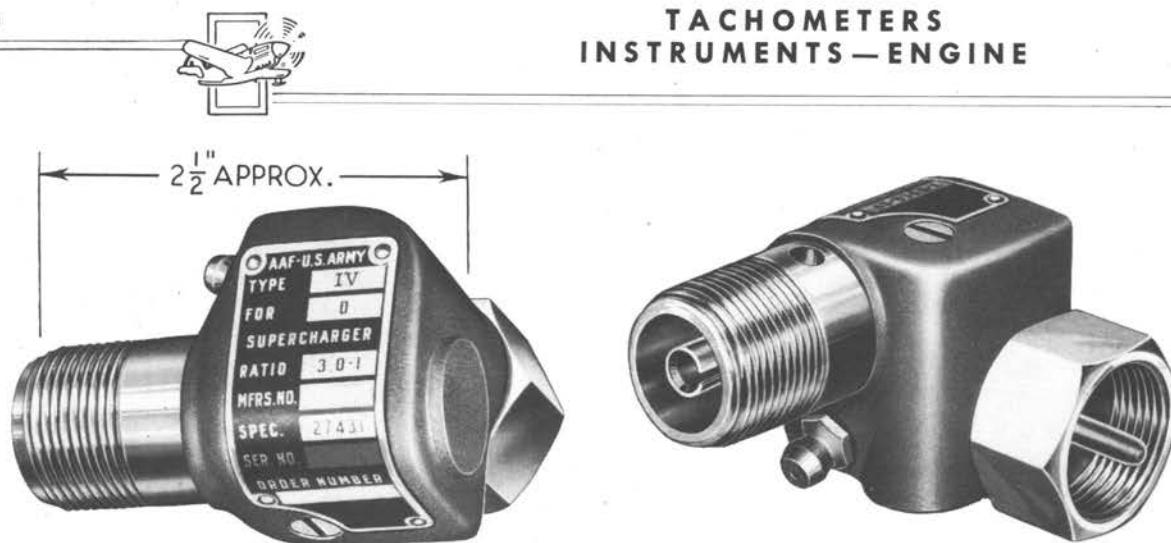
NAVY

DRAWING NUMBER: AN4041
F. S. S. C. NUMBER: 88-A-227
PROCUREMENT STATUS: Sub-standard—G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	British Reference Number
Air Associates	*AN4041		A-N-B	6100002250	106A/486
The S. S. White Dental Manufacturing Co.		2570-Y	B		106A/486

*AN drawing



ADAPTER—TURBOSUPERCHARGER TACHOMETER DRIVE

NAMES: Tubosupercharger tachometer drive adapter
Tachometer adapter

Gear box adapter
Adapter assembly—tachometer drive

DESCRIPTION: These adapters are attached to the tachometer drive outlet on the oil pump of a turbosupercharger in order to obtain a speed reduction of 20 to 1 between the turbosupercharger shaft and the tachometer. One end of the adapter is screwed directly into the turbosupercharger oil pump tachometer shaft outlet. The other end is at right angles and has a nut to receive one end of the flexible tachometer drive shaft.

Five gear ratios are available to provide proper speed reduction; the ratio used depending upon the drive ratio between the turbosupercharger shaft and its tachometer outlet.

CHARACTERISTICS:

Weight.....approximately 1/2 pound
Dimensions.....approximately 2 1/2 by 2 by 1 1/2 inches

RELATIONSHIP OF PARTS: Used with:

Tachometer generator drive shaft Army type A-3, A. E. Reference Number 61-7500 and Army type C-1 turbosupercharger.

ARMY

A. E. REFERENCE NUMBER: Refer to chart.

SPECIFICATIONS: Detail.....27431

TYPE DESIGNATION: Refer to chart.

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	A. E. Reference Number	Army Type	Gear Ratio	Turbo-supercharger Drive Ratio
Peerless of America	7800-1	A	6100002265	61-272	I	2.1:1	9.5:1
	7800-2	A	6100002270	61-273	II	2.4:1	8.3:1
	7800-3	A	6100002275	61-274	III	3.0:1	6.65:1
	7800-4	A	6100002280	61-275	IV	3.8:1	5.25:1
	7800-5		6100002285	61-276		2.0:1	10:1



LENGTH 24" APPROX.

SHAFT—TACHOMETER GENERATOR DRIVE

ARMY TYPE A-3

NAMES: Tachometer generator drive shaft
Tachometer shaft

DESCRIPTION: The Army type A-3 tachometer generator drive shaft is composed of a wire around which two, or more, layers of steel wire are wound in opposite directions. It has a casing of bronze, spirally wound flexible tubing covered with a non-magnetic wire braid, and will operate in either direction at speeds up to 9000 revolutions per minute.

CHARACTERISTICS:

Length.....approximately 24 inches
Weight.....approximately 1 pound

RELATIONSHIP OF PARTS: Used to connect tachometer generators with aircraft engines or turbo-superchargers, and to connect any governing or warning device which may be used with a turbo-supercharger.

ARMY

A. E. REFERENCE NUMBER: 61-7500

SPECIFICATIONS: Detail.....27432

MANUFACTURER'S PART NUMBER: S. S. White Dental Manufacturing Company 3683Y-Q

TYPE DESIGNATION: A-3

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.



THERMOMETERS

Thermometers are used on aircraft to indicate the temperatures of engine oil and coolant, cylinder head or barrel, carburetor air or mixture, and outside or cabin air. They warn the pilot or flight engineer of abnormal or dangerous temperature operating conditions.

Thermometers consist of an element responsive to temperature change and an indicator which will make the temperature visible to the pilot.

Three types of indicators are in use for aircraft. They are the Bourdon or mechanical type, the electrical type and the remote indicating (autosyn) type. Indicators referred to as dual thermometer indicators are equipped with two dial scales for measuring temperatures from two locations simultaneously, such as left and right engine.

The Bourdon tube indicator consists of a hollow metal tube bent in an arc of a circle and sealed at one end. When the pressure inside the tube is changed, the tube circle straightens out, or closes. The open end of the tube is fixed, and provides an inlet for the pressure. The sealed end is free, and its motion is transmitted to a pointer. The movement is proportional to the pressure in the tube.

Electrical indicators may be galvanometer type or ratio-meter type.

Autosyn indicators make remote indication of temperatures possible. This type of indicator is used in connection with a gage and transmitter so that an indication may be had remote from the location of the gage. The autosyn consists of 2 three-phase wound motors whose stators are electrically connected. One motor is used as a transmitter and the other as a receiver. Movement of the rotor of one of the autosyns (transmitter) causes a corresponding movement in the autosyn (receiver) to which it is connected. The gage initiates movement of the transmitter rotor.

Temperature responsive elements may be classified according to operating principle as follows:

- Vapor pressure (capillary)
- Bimetal
- Electrical resistance
- Thermocouple

The indicators and elements are used in the following combinations:

VAPOR PRESSURE THERMOMETER

Vapor pressure thermometers consist of a bulb connected to an indicator by capillary tubing. This tubing is made of copper, has a small inside diameter and is covered on the outside by flexible metallic braid. The bulb contains a liquid whose vapor pressure is transmitted through the tube to a Bourdon type gage. The vapor pressure varies with temperature, so the dial scale of the gage can be calibrated in degrees of temperature.

BIMETAL THERMOMETER

The bimetal thermometer consists of a spiral spring made by welding together strips of two dissimilar metals. These metals have different expansion rates, which causes the spring to wind

(Continued on Page 88)



THERMOMETERS

(Continued from Page 87)

or unwind when exposed to changing temperatures. One end of the spring is anchored, and the other end is attached to a pointer on the indicator.

ELECTRIC RESISTANCE THERMOMETER

The temperature sensitive element of this thermometer consists of a resistance element (such as nickel wire) enclosed in a bulb. The resistance of the element changes directly with temperature. This element is part of an electrical circuit known as the Wheatstone bridge, which is so arranged that a change in the resistance of the temperature element causes a galvanometer type instrument to indicate such changes.

Older models of resistance type thermometers require that the element and meter combinations be fixed by the manufacturer. Present day practice has standardized the characteristics so that any standard resistance bulb may be used with any standard indicator, regardless of manufacturer.

RATIO RESISTANCE THERMOMETER

The ordinary bridge type instrument is subject to error, because the airplane system voltage varies. This source of error has been overcome by the addition of a second moving coil in the galvanometer circuit. With this arrangement, any change of voltage in the aircraft electrical supply affects both coils equally, and the pointer is moved only when the ratio of the current is changed.

The ratio resistance thermometer is an electrical resistance type in which the standard resistance bulb is used with a ratio-meter type indicator.

THERMOCOUPLE THERMOMETER

This thermometer depends for its sensitive element upon the fact that two dissimilar metals, placed together and heated, generate a voltage, which can be conducted through wires to millivoltmeter type instruments.

For Army and Navy use, iron and constantan have been adopted as the two metals for the thermocouple. The Navy, in the past, used copper and constantan. In order that there be only one sensitive junction, it is necessary that the leads from the thermocouple and the connections to the instrument be made of the same material as the thermocouple itself. In addition, the leads for each instrument must have a definite resistance for proper calibration of the indicator. Newest designs incorporate a variable resistor, in order to adjust the resistance of the leads to the proper value for each installation, regardless of length of connection wires. The present standard thermocouple is a spark plug gasket type, manufactured according to drawing AND10200.

REMOTE INDICATING (AUTOSYN) THERMOMETER

By using a Bourdon tube to move an autosyn transmitter as described under "indicators" above, the autosyn thermometer enables the vapor pressure type element to indicate at a remote location.

**INDICATOR—SINGLE THERMOMETER****AN5790-6****F. S. S. C. NUMBER 88-I-2720**

NAMES: Single thermometer indicator
Dial thermometer
Electric thermometer
Universal thermometer

Electrical resistance type thermometer indicator
Thermometer indicator
Indicator—thermometer, electrical resistance type

DESCRIPTION: The AN5790-6 is an electrical resistance type universal thermometer, used to indicate the temperature of engine oil, coolant, carburetor mixture, carburetor air or free air.

CHARACTERISTICS:

Range.....—70 to 150 degrees centigrade
Dial size.....1 7/8 inch round dial
Lighting.....fluorescent
Voltage.....12 or 24 volts direct current (all models operate on either voltage)
Electrical receptacle.....AND10066-14S-2P
Electrical connector.....AN3106-14S-2S
Overall dimensions.....approximately 3 1/2 by 2 5/8 by 2 5/8 inches
Weight.....approximately 1 pound

RELATIONSHIP OF PARTS: Used with resistance bulb AN5525-1, A. E. Reference Number 61-8906, F. S. S. C. number 88-B-890; or AN5525-2, A. E. Reference Number 61-8901, F. S. S. C. number 88-B-895.

ARMY

A. E. REFERENCE NUMBER: 61-8902

SPECIFICATIONS:

General....94-27325-A
Detail....AN-GG-I-522a
Superseded AN-GG-I-522, 94-27991,
94-27947, 94-27949, 94-27945,
94-27990, 94-27927.

AN DRAWING NUMBER: AN5790

AN PART NUMBER: AN5790-6

A. S. C. STOCK NUMBER: 6100250280

(Refer to chart.)

PRODUCTION STATUS: Under procurement.

Supersedes Army types A-21, A-23, F-8,
F-9, C-11, and C-12.

SHIPPING DATA: Shipped as a complete unit.

NAVY**SPECIFICATIONS:**

Detail....AN-GG-I-522a

Superseded..AN-GG-I-522, SQ-105

AN DRAWING NUMBER: AN5790

AN PART NUMBER: AN5790-6

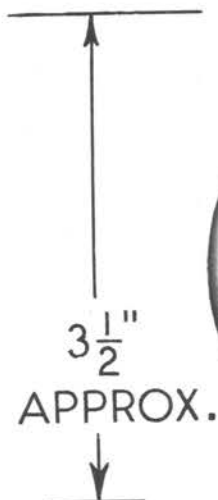
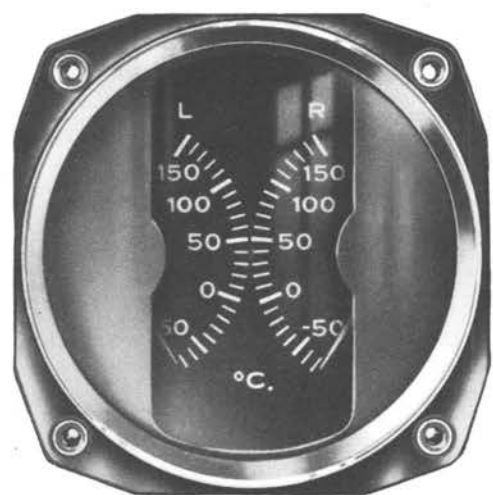
F. S. S. C. NUMBER: 88-I-2720

PROCUREMENT STATUS: Standard—
G. F. E.—Order through A. S. O. by
F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	British Reference Number
Thomas A. Edison, Inc.		33204	A-N-B	6100250277	106A/1364
Electric Auto-Lite Co.		10283A	A-N-B	6100250275	106A/1364
Westinghouse Electric & Manufacturing Co.		1163617	A-B	6100250279	106A/1364
Weston Electrical Instrument Corp.	Model 727, Type 52	110077	A-N-B	6100250278	106A/1364
Edison-Splitdorf Corp.		33310	N		
General Electric Co.		8DJ23AAA	N		
Hickok Electrical Instrument Co.		60014	N		

THERMOMETERS INSTRUMENTS—ENGINE



INDICATOR—DUAL THERMOMETER

AN 5795-6 F. S. S. C. NUMBER 88-I-2700

NAMES: Dual thermometer indicator
Dial thermometer
Electric thermometer
Universal thermometer

Electrical resistance type thermometer indicator
Thermometer indicator
Indicator—thermometer, electrical resistance type

DESCRIPTION: The AN5795-6 is an electrical resistance universal dual thermometer, used to indicate the temperature of engine oil, coolant, carburetor mixture, carburetor air or free air.

CHARACTERISTICS:

Range.....-70 to 150 degrees centigrade
Dial size.....2 3/4 round dial
Lighting.....fluorescent
Voltage.....12 or 24 volts direct current (all models operate on either voltage)
Electrical receptacle.....AND10066-14S-5P
Electrical connector.....AN3106-14S-5S
Overall dimensions.....approximately 3 1/2 by 3 1/2 by 3 1/2 inches
Weight.....approximately 1 3/5 pounds

RELATIONSHIP OF PARTS: Used with resistance thermometer bulbs AN5525-1, A. E. Reference Number 61-8906, F. S. S. C. number 88-B-890, or AN5525-2, A. E. Reference Number 61-8901, F. S. S. C. number 88-B-895.

ARMY

A. E. REFERENCE NUMBER: 61-8911

SPECIFICATIONS:

General.....94-27325A
Detail.....AN-GG-I-522A
Superseded.....AN-GG-I-522, 94-27944, 94-27999,
94-27997, 27946, 94-27998.

AN DRAWING NUMBER: AN5795

AN PART NUMBER: AN5795-6

A. S. C. STOCK NUMBER: 6100250285 (Refer to chart).

PRODUCTION STATUS: Under procurement. Supersedes Army type A-22, A-24, A-25, F-7, and F-10.

SHIPPING DATA: Shipped as a complete unit

NAVY

SPECIFICATIONS:

Detail.....AN-GG-I-522A

Superseded.....AN-GG-I-522, SQ-105

AN DRAWING NUMBER: AN5795

AN PART NUMBER: AN5795-6

F. S. S. C. NUMBER: 88-I-2700

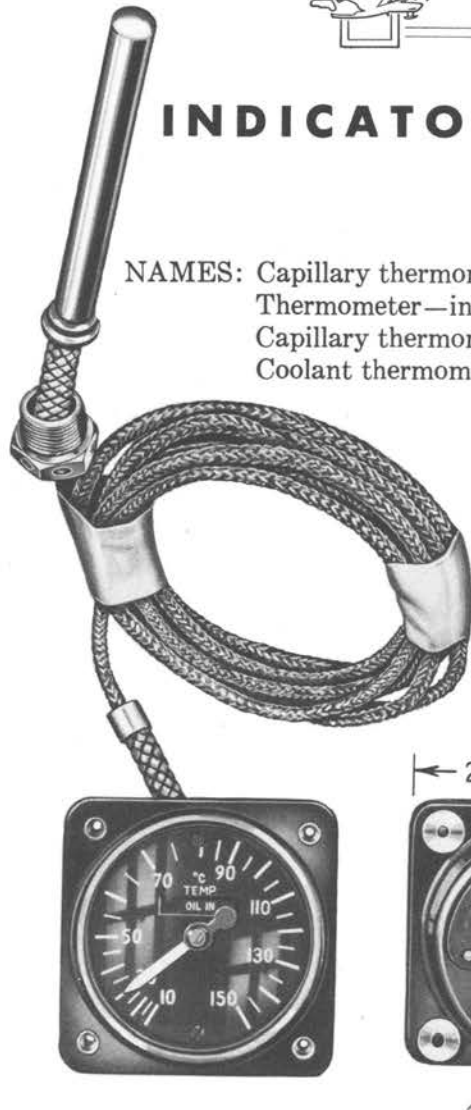
PROCUREMENT STATUS: Standard—
G. F. E.—Order through A. S. O. by
F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	British Reference Number
Thomas A. Edison, Inc.		33205	A-N-B	6100250284	106A/1397
Electric Auto-Lite Co.		10284-A	A-B	6100250283	106A/1397
Hickok Electrical Instrument Co.		60015	A-N-B	6100250284-5	106A/1397
Sutton-Horsley Co., Ltd.		2213-9	A-B	6100250282	106A/1397
Wheeloo Instrument Co.		60015	A-B	6100250284-5	106A/1397
Westinghouse Electric & Manufacturing Co.		1163618	A-B	6100250284-8	106A/1397
Weston Electrical Instrument Co.	Model 828, Type 4	110612	A-N-B	6100250284-7	106A/1397
General Electric Company		8DJ24AAA	N		

INDICATOR—CAPILLARY THERMOMETER

ARMY TYPE A-20



NAMES: Capillary thermometer indicator
Thermometer—indicator
Capillary thermometer
Coolant thermometer

Dial thermometer
Oil thermometer
Vapor pressure thermometer

DESCRIPTION: This is a vapor pressure type thermometer, used for indicating either engine oil or engine coolant temperature.

CHARACTERISTICS:

Markings fluorescent
Range 10 to 150 degrees centigrade
*Capillary length specified by procuring agency
Dial 1 7/8 inches diameter
Dimensions 2 1/2 by 2 3/8 by 2 3/8 inches

RELATIONSHIP OF PARTS: The bulb, capillary and indicator are permanently fitted together.

INSTALLATION PECULIARITIES: A movable plate permits the dial to be changed to read either "Oil in" or "Coolant".

ARMY

A. E. REFERENCE NUMBER: 61-8926
SPECIFICATIONS:

General 94-27191
Detail 94-27926-B
Superseded 94-27926-A

TYPE DESIGNATION: A-20

A. S. C. STOCK NUMBER: 6100407511

TECHNICAL ORDER NUMBER: 05-40A-1

PRODUCTION STATUS: Under procurement

SHIPPING DATA: Shipped as a complete unit

NAVY

There is no Navy equivalent for this item.

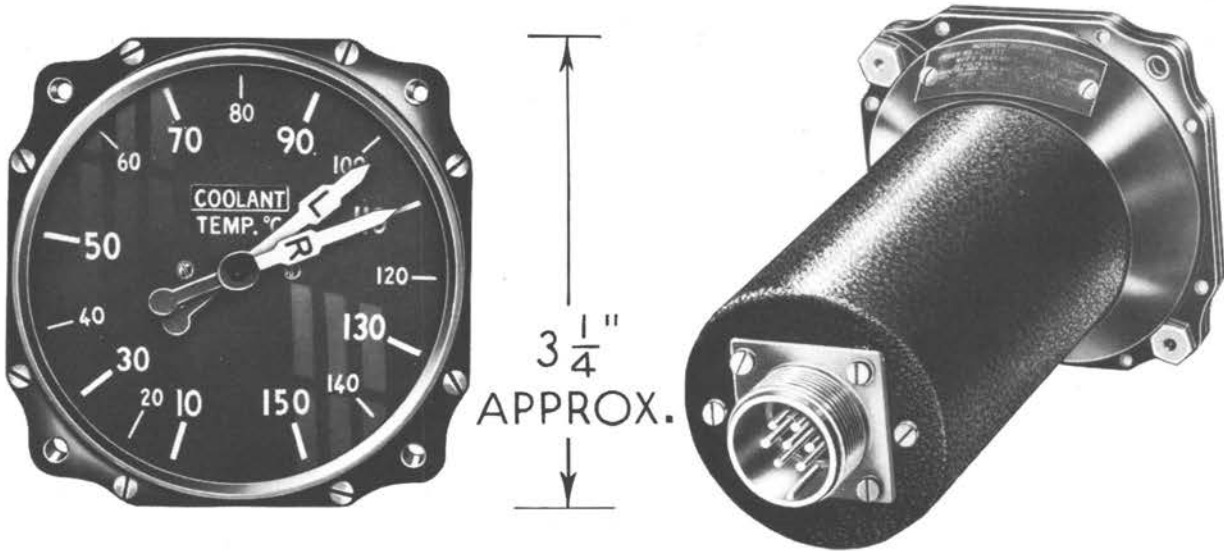
***TABULATED ITEMS BELOW ARE INTERCHANGEABLE**
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	British Reference Number	Remarks
The Electric Auto-Lite Co.	9755-A8	C	6100407512	106A/1349	8 feet capillary tube.
	9755-A13	A-B-C	6100407514		13 feet capillary tube.
	9755-A15	C	6100407516		15 feet capillary tube.
	9755-A22	C	6100407518		22 feet capillary tube.
	9755-A28	C	6100407520		28 feet capillary tube.
	9755-A34	C	6100407522		34 feet capillary tube.
	10177-A	A-B-C	6100407513	106A/1349	8 feet capillary tube.
United States Gauge Co.	AW-1 7/8-20-CI-8	A-B	6100407511	106A/1349	8 feet capillary tube.

*Commercial manufacturers have made this thermometer in varying capillary tube lengths up to thirty-five feet. The commercial thermometers could be substituted in case of emergency where the substitution has the longer capillary tube lengths.



THERMOMETERS
INSTRUMENTS—ENGINE



INDICATOR—DUAL THERMOMETER
ARMY TYPE A-22

NAMES: Dual thermometer indicator
Autosyn thermometer
Coolant thermometer
Dial thermometer
Oil thermometer
Thermometer; oil or coolant, Type A-22

DESCRIPTION: This is an electrical self-synchronous (autosyn) thermometer indicator, used for simultaneously indicating oil temperatures of two engines.

CHARACTERISTICS:

Markings.....	fluorescent
Range.....	10 to 150 degrees centigrade
Power supply.....	26 volts, 400 cycles
Electric receptacle.....	7 pin, AN3102-16S-1P
Weight.....	approximately 1 1/4 pounds
Dial size.....	approximately 2 3/4 inches
Dimensions.....	approximately 6 by 3 1/4 by 3 1/4 inches

RELATIONSHIP OF PARTS: Used with: Two transmitters, Army type A-22, A. E. Reference Number 61-8952

ARMY

A. E. REFERENCE NUMBER: 61-8951
SPECIFICATIONS:

General.....	94-27864-A
Detail.....	27946

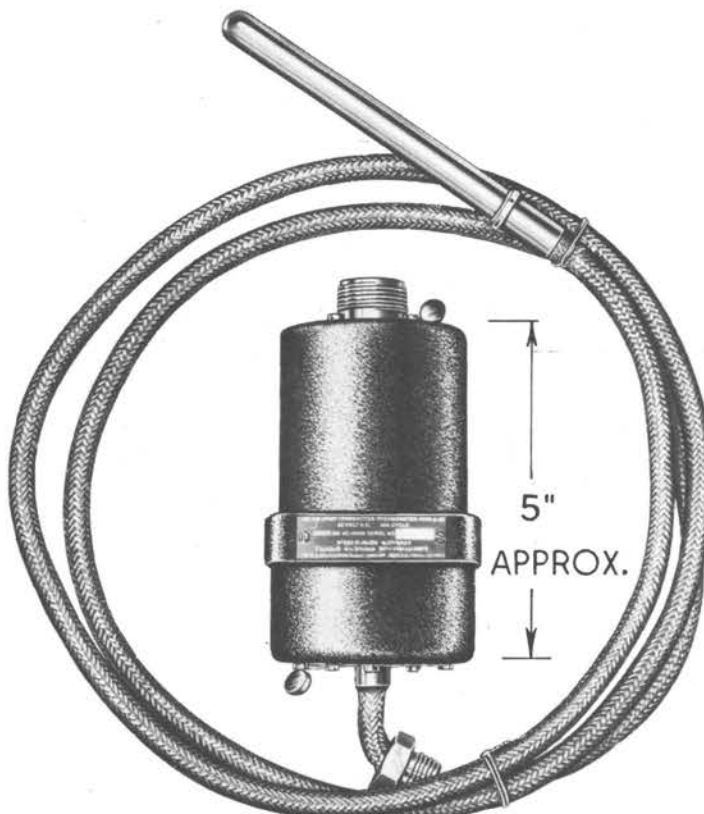
TYPE DESIGNATION: A-22
A. S. C. STOCK NUMBER: Refer to chart
TECHNICAL ORDER NUMBER: 05-55B-1
PRODUCTION STATUS: Not under procurement for initial installation. Superseded by AN5795-6, A. E. Reference Number 61-8911
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Used By	Air Service Command Stock Number	British Reference Number
Piogeer Instrument Division	6007-3B-7-A	A-B	6100250130	106A/932
	6007-3C-7-A	A-B-C	6100250140	106A/932



TRANSMITTER—THERMOMETER

ARMY TYPE A-22

NAMES: Thermometer transmitter
Autosyn transmitter

Vapor type thermometer transmitter
Instrument, (aircraft) Remote indicating self
synchronous

DESCRIPTION: This is an electric autosyn thermometer transmitter, with vapor type bulb, capillary tube, and Bourdon type actuating mechanism, used for transmitting engine oil temperature to an indicator.

CHARACTERISTICS:

Range (degrees C.)	10 to 150 degrees centigrade
Power supply	26 volts, 400 cycles
Electric receptacle	4 pin, AN3102-14S-2P
Weight	approximately 1¼ pounds
Dimensions	approximately 6 by 3¼ by 3¼ inches

RELATIONSHIP OF PARTS: Used with:

Dual thermometer autosyn indicator..... A. E. Reference Number 61-8951

ARMY

A. E. REFERENCE NUMBER: 61-8952

SPECIFICATIONS:

General	94-27864-A
Detail	27946

MANUFACTURER'S PART NUMBER: Pioneer Instrument Division 4455-3C-A3

TYPE DESIGNATION: A-22

A. S. C. STOCK NUMBER: 6100439025

TECHNICAL ORDER NUMBER: 05-55B-1

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by A-24

SHIPPING DATA: Shipped as a complete unit

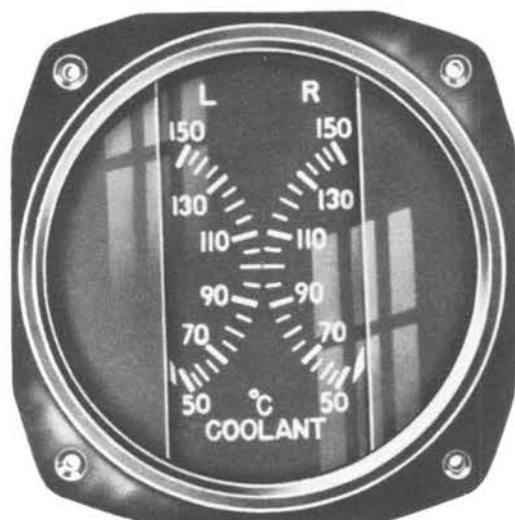
NAVY

There is no Navy equivalent for this item.

BRITISH

REFERENCE NUMBER: 106A/917

THERMOMETERS INSTRUMENTS—ENGINE



3 ¹/₄
APPROX.



INDICATOR—DUAL ELECTRIC THERMOMETER

ARMY TYPE A-25

NAMES: Dual electric thermometer indicator
Coolant thermometer
Dial thermometer

Dual thermometer
Electric thermometer
Ratio meter type indicator

DESCRIPTION: Electric ratio meter type thermometer indicator, used for indicating simultaneously on a single dial, two separate engine coolant temperatures.

CHARACTERISTICS:

Markings.....fluorescent
Range.....50 to 150 degrees centigrade
Electric receptacle.....4 pins, AND10066-14S-2P
Electric connector.....AN3106-14S-2S
Weight.....approximately 1 pound

Dial size.....2 ³/₄ inches
Voltage.....24 volts, direct current
Depth.....approximately 3 ¹/₂ inches
Diameter.....approximately 3 ¹/₄ inches

RELATIONSHIP OF PARTS: Any of the following long bulbs with AN connectors may be used:

Weston—part numbers—100732, 101731, 102172, 103710, 106347 (AN5525-2)
Edison-Spittorf—part number B-2202 (AN5525-2)
Sutton-Horsley—part number R-322-3 (AN5525-2)

ARMY

A. E. REFERENCE NUMBER: 61-9026

SPECIFICATIONS:

Detail.....94-27999
Superseded.....27999

TYPE DESIGNATION: A-25

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: O5-40B-1

PRODUCTION STATUS: Under procurement. Superseded by universal thermometer AN5795-6, A. E. Reference Number 61-8911.

SHIPPING DATA: Shipped as a complete unit.

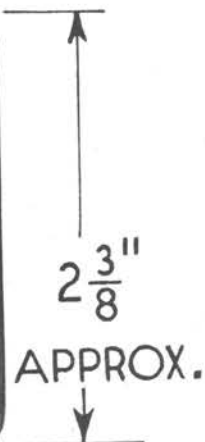
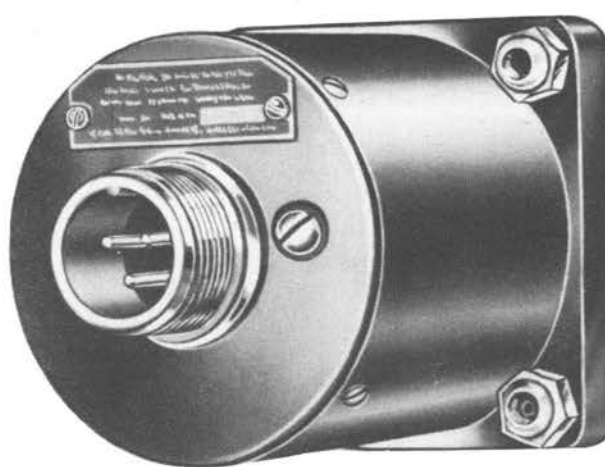
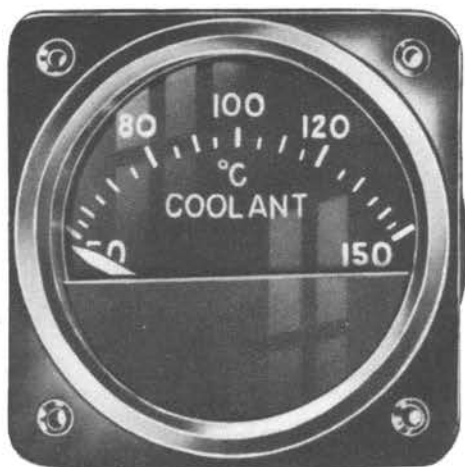
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Type
Thomas A. Edison, Incorporated		33400	A	6100250265	A-25
The Electric Auto-Lite Co.		10284-A	A	6100250283	A-25
The Hickok Electrical Instrument Co.	58-600	60016	A	6100250267	A-25
Wheelco Instrument Company		60016	A	6100250267	A-25

NOTE: Indicator AN5795-6 on page 90 is interchangeable with all Thermometer indicators listed above, but requires an auxiliary plate to indicate function.



INDICATOR—SINGLE ELECTRIC THERMOMETER

ARMY TYPE A-23

NAMES: Single electric thermometer indicator
Thermometer—indicator
Coolant thermometer

Dial thermometer
Electric thermometer
Radio meter type thermometer indicator

DESCRIPTION: Electric ratio meter type thermometer indicator, used for indicating engine coolant temperature.

CHARACTERISTICS:

Markings.....	fluorescent	Dial size.....	1 7/8 inches
Range.....	50 to 150 degrees centigrade	Voltage.....	24 volts direct current
Electric receptacle.....	3 pins, AND10066-14S-1P	Depth.....	approximately 3 1/2 inches
Weight.....	approximately 1 pound	Diameter.....	approximately 2 3/8 inches

RELATIONSHIP OF PARTS: Any of the following long bulbs with AN connectors may be used:

Weston—part numbers—100732, 101731, 102172, 103710, 106347 (AN5525-2)

Edison-Splitdorf—part number—B-2202 (AN5525-2)

Sutton-Horsley—part number—R-322-3 (AN5525-2)

ARMY

A. E. REFERENCE NUMBER: 61-8976

SPECIFICATIONS:

General.....	94-27325-A
Detail.....	94-27947-A
Superseded.....	94-27947

TYPE DESIGNATION: A-23

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: Refer to chart

PRODUCTION STATUS: Under procurement. Superseded by universal thermometer AN5790-6.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

(Continued on Page 96)



INDICATOR—SINGLE ELECTRIC THERMOMETER

(Continued from Page 95)

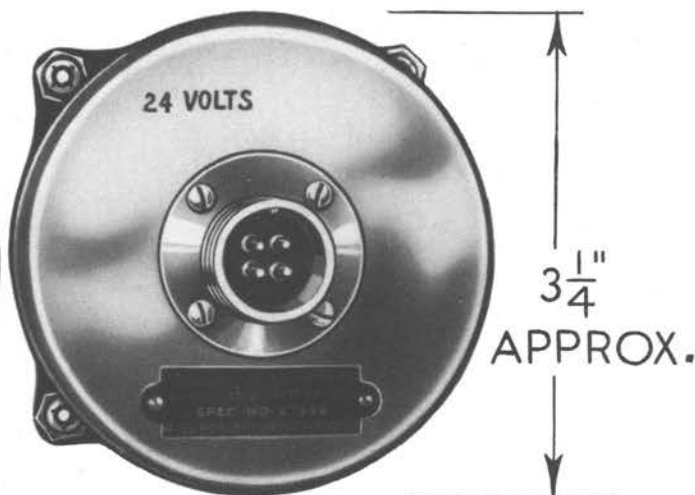
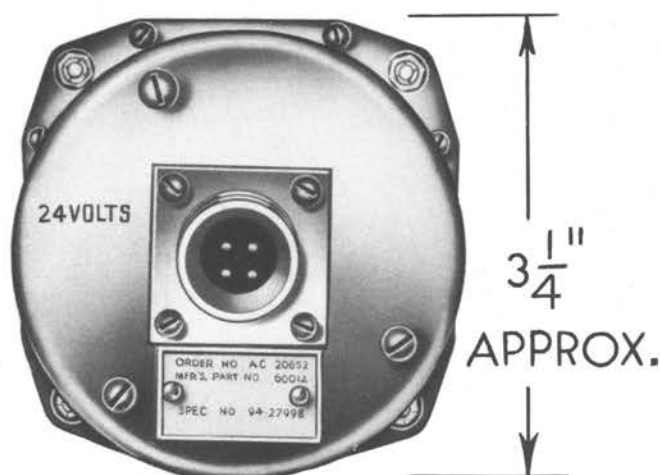
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Electrical Connectors
Thomas A. Edison, Inc.		33201	A-B	6100250170	05-40B-1	106A/862	A-23	AN3106-14S-1S
Weston Electrical Instrument Corp.	Model 727, Type 24	102116	A-B	6100250180	05-40B-1	106A/862	A-23	AN3106-14S-1S
	Model 727, Type 45	108260	A-B	6100250190	05-40B-1	106A/862	A-23	AN3106-14S-1S
	Model 727, Type 32		A-B	6100246616	05-40B-1	106A/862	A-23	AN3106-14S-1S

Note: Indicator AN5790-6, on page 90, is interchangeable with all thermometer indicators listed above, but requires an auxiliary plate to indicate function (Oil Temp.)



THERMOMETERS INSTRUMENTS—ENGINE



INDICATOR—DUAL ELECTRIC THERMOMETER

ARMY TYPE A-24

NAMES: Dual electric thermometer indicator
Dial thermometer
Dual thermometer indicator

Electric thermometer
Oil thermometer
Ratio meter type indicator

DESCRIPTION: Electric ratio meter type thermometer indicator, used for simultaneously indicating, on a single dial, oil temperatures of two engines.

CHARACTERISTICS:

Markings fluorescent	Dial size 2 3/4 inches
Range 20 to 120 degrees centigrade	Voltage 24 volts, direct current
Electric receptacle 4 pins, AND10066-14S-2P	Depth approximately 3 1/2 inches
Weight approximately 1 pound	Diameter approximately 3 1/4 inches

RELATIONSHIP OF PARTS: Any of the following long bulbs with AN connectors may be used:

Weston—part numbers—100732, 101731, 102172, 103710, 106347 (AN5525-2)
Edison-Splitdorf—part number—B-2202 (AN5525-2)
Sutton-Horsley—part number—R-322-3 (AN5525-2)

(Continued on Page 98)



INDICATOR—DUAL ELECTRIC THERMOMETER

(Continued from Page 97)

ARMY

A. E. REFERENCE NUMBER: 61-9001

SPECIFICATIONS:

General.....94-27325-A
 Detail.....94-27998
 Superseded.....27998

TYPE DESIGNATION: A-24

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Superseded by universal thermometer AN5795-6, A. E.
 Reference Number 61-8911.

SHIPPING DATA: Shipped as a complete unit.

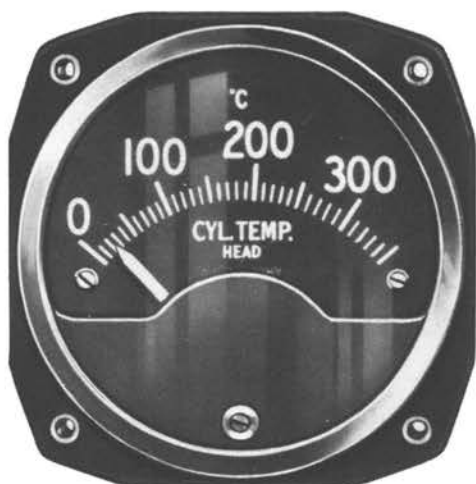
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Electrical Connectors	Remarks
Thomas A. Edison, Inc.		33207	A-B	6100250220		106A/944	A-24	AN3106-14S-2S	
The Hickok Electrical Instrument Co.		60017-A	A-B	6100250235		106A/944	A-24	AN3106-14S-2S	One movement single pole, double throw switch, interchangeable with 60012.
Sutton-Horsley Co., Ltd.	58-600	60012	A-B	6100250225	05-40B-3	106A/944	A-24	AN3106-14S-2S	Universal thermometer
Weston Electrical Instruments Corporation	Model 828, Type 2	103107	A-B	6100250240	05-40B-1	106A/944	A-24	AN3106-14S-2S	Universal thermometer
Wheelco Instrument Co.	58-600	60012	A-B	6100250225		106A/944	A-24	AN3106-14S-2S	Universal thermometer

Note: Indicator AN5795-6, on page 90, is interchangeable with all thermometer indicators listed above. Universal thermometers marked "°C" require an auxiliary plate to indicate function.



3 ¹/₄"
APPROX.



3 ¹/₄"
APPROX.

INDICATOR—THERMOCOUPLE THERMOMETER ARMY TYPE B-9

NAMES: Thermocouple thermometer indicator
Thermometer assembly—thermocouple

DESCRIPTION: Electrical thermometer indicator, for use with a thermocouple to indicate cylinder head temperatures.

CHARACTERISTICS:

Markings fluorescent
Range 0 to 350 degrees centigrade
Lead resistance 2 ohms
Type of terminal . . . 2 studs
Weight approximately 1 ¹/₄ pounds

Dial size 2 ³/₄ inches
Depth approximately 2 ³/₄ inches
Diameter approximately 3 ¹/₄ inches
Thermocouple and leads . iron constantan

RELATIONSHIP OF PARTS: Used with: Thermocouple, iron-constantan type, drawing number AND10200

(Continued on Page 100)



THERMOMETERS INSTRUMENTS—ENGINE

INDICATOR—THERMOCOUPLE THERMOMETER

(Continued from Page 99)

ARMY

A. E. REFERENCE NUMBER: 61-9101

SPECIFICATIONS:

Detail..... 94-27928-B
Superseded..... 94-27928-A; 94-27928

AN OR A. A. F. DRAWING NUMBER: AND10401 (Case)

TYPE DESIGNATION: B-9

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, not including thermocouple or leads.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Lighting and Dial Finish (**)	Army Type	Mounting	Remarks
Weston Electrical Instrument Corporation	Model 602, Type 113	102316	A-B	6100255540	05-40-3	106A/846	(B)	B-9	Back	
	Model 602, Type 122	110430	A-B			106A/846	(B)	B-9	Front or back	
	Model 602, Type 80	86884	A-B	6100254250	05-40-3	106A/889	Individual (A)	B-7	Back	Make cutout in panel for light
DeJur-Amsco Corporation		Z-22.24	A-B	6100255535		106A/846	(B)	B-9	Front or back	
		17AT48	A-B	6100255525	05-40-3	106A/846	(B)	B-9	Front or back	
The Lewis Engineering Company		17AT2	A-B	6100254000	05-40-3	106A/889	Individual (A)	B-7	Back	Make cutout in panel for light

(**) Details on finish of dial markings appear in this Index under the heading of "Dial—Instrument Lighting."

(A) Major graduations finished with radium luminous material.

(B) Dial markings finished with phosphorescent or fluorescent luminous materials for use with external fluorescent (ultra-violet) lighting.



3 1/4"
APPROX.



3 1/4"
APPROX.

INDICATOR—DUAL THERMOCOUPLE THERMOMETER

ARMY TYPE B-11

NAMES: Dual thermocouple thermometer indicator
Thermometer assembly—thermocouple

Thermocouple thermometer
Cylinder head temperature indicator

DESCRIPTION: Electric millivoltmeter type indicator, used to give two simultaneous cylinder head temperature readings when connected with two thermocouples.

CHARACTERISTICS:

Markings.....fluorescent
Range.....0 to 350 degrees C.
Weight.....approximately 1 1/2 pounds
Dial size.....2 3/4 inches

Dimensions.....approximately 3 1/16 by 3 1/4 by 3 1/4 inches
Thermocouples and leads...iron-constantan
Lead resistance.....8 ohms
Type terminal.....4 studs

RELATIONSHIP OF PARTS: Used with: Thermocouple, iron-constantan type, drawing AND10200

(Continued on Page 102)



INDICATOR—DUAL THERMOCOUPLE THERMOMETER

(Continued from Page 101)

ARMY

A. E. REFERENCE NUMBER: 61-9126

SPECIFICATIONS:

Detail..... 94-27971-B
Superseded..... 94-27971-A

TYPE DESIGNATION: B-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: AN 05-40D-1 (General instructions)

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, not including thermocouples or leads.

NAVY

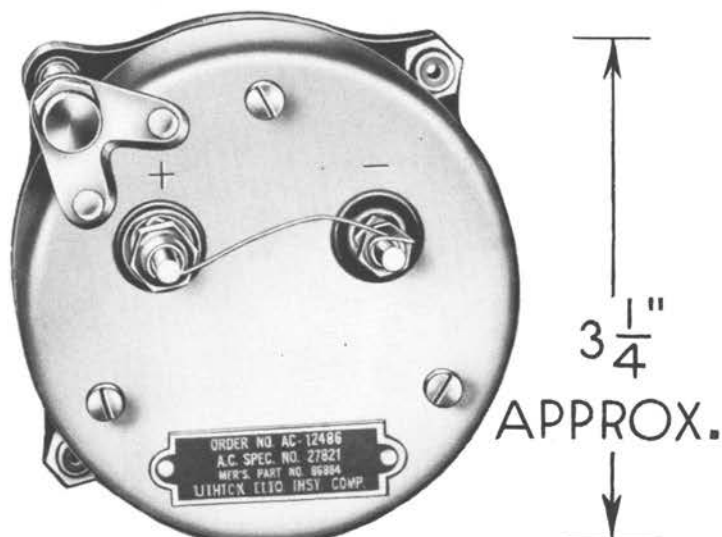
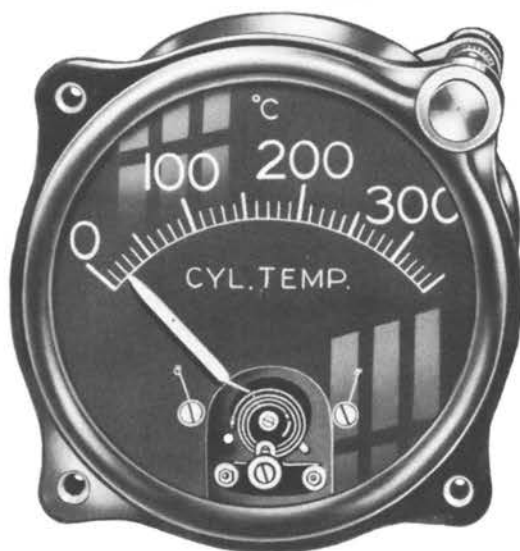
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Pointers	Mounting
Weston Electrical Instrument Corp.	Model 635, Type 35	102319	A-B	6100255640	05-40-3	106A/919	Crossed	Back
	Model 635, Type 54	110507	A-B			106A/919	Crossed	Front or back
	Model 827, Type 2	110586	A-B			106A/919	Opposed	Front or back
	Model 635, Type 45		C				Crossed	Back
The Lewis Engineering Company		76AT3	A-B	6100255635	05-40-3	106A/919	Opposed	Front or back
		76AT3B	A-B	6100255637		106A/919	Opposed	Front or back
		76AT3C	C				Opposed	Front or back
		76AT3D	C				Opposed	Front or back
DeJur Amsco Corporation		Z-22.22	A-B	6100255633		106A/919	Opposed	Front or back



THERMOMETERS INSTRUMENTS—ENGINE



INDICATOR—THERMOCOUPLE THERMOMETER ARMY TYPE B-7

NAMES: Thermocouple thermometer indicator
Thermometer assembly—thermocouple

Thermocouple thermometer
Cylinder head temperature indicator

DESCRIPTION: Electrical thermometer indicator, used with a thermocouple to indicate cylinder head temperature.

CHARACTERISTICS:

Markings radioactive
Lighting individual
Range 0 to 350 degrees centigrade
Lead resistance 2 ohms
Type of terminal 2 studs

Weight approximately 2 pounds
Dial size approximately 2 3/4 inches
Depth approximately 2 3/4 inches
Diameter approximately 3 1/4 inches
Thermocouples and leads iron-constantan

RELATIONSHIP OF PARTS: Used with: Thermocouple, iron-constantan type, drawing number AND10200.

ARMY

A. E. REFERENCE NUMBER: 61-9051

SPECIFICATIONS:

Detail 94-27821A

Superseded 94-27821

TYPE DESIGNATION: B-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit, not including thermocouples or leads.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Lighting and Dial Finish (**)	Army Type	Mounting
Weston Electrical Instrument Corp.	Model 602, Type 80	86884	A-B	6100254250	05-40-3	106A/889	Individual (A)	B-7	Back
	Model 602, Type 113	102316	A-B	6100255540	05-40-3	106A/846	(B)	B-9	Back
	Model 602, Type 122	110430	A-B			106A/846	(B)	B-9	Front or Back
The Lewis Engineering Co.		17AT2	A-B	6100254000	05-40-3	106A/889	Individual (A)	B-7	Back
		17AT4B	A-B	6100255525	05-40-3	106A/846	(B)	B-9	Front or Back
DeJur-Amsco Corporation		Z-22.24	A-B	6100255535		106A/846	(B)	B-9	Front or Back

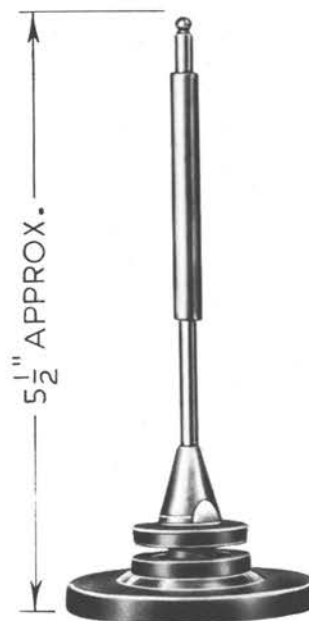
(**) Details on finish of dial markings appear in this Index under the heading of "Dial—Instrument Lighting."

(A) Major graduations finished with radium luminous material.

(B) Dial markings finished with phosphorescent or fluorescent luminous materials for use with external fluorescent (ultra-violet) lighting.



THERMOMETERS INSTRUMENTS—ENGINE



THERMOMETER—BIMETAL DIRECT READING

ARMY TYPE C-13, C-13A F. S. S. C. NUMBER 88-T-1560

NAMES: Bimetal direct reading thermometer
Thermometer indicator
Bimetal thermometer

Dial thermometer
Direct reading thermometer
Free air thermometer

DESCRIPTION: Bimetal type direct reading thermometer, used for indicating free air temperature.

CHARACTERISTICS:

Markings.....	fluorescent
Range.....	-70 to 50 degrees Centigrade
Weight.....	approximately $\frac{1}{8}$ pound
Dial.....	$1\frac{7}{8}$ inches diameter
Dimensions.....	approximately $5\frac{1}{2}$ by $2\frac{1}{8}$ by $2\frac{1}{8}$ inches

ARMY

A. E. REFERENCE NUMBER: 60-8701
SPECIFICATIONS:

Detail..... 94-27328
Superseded..... 27328

TYPE DESIGNATION: C-13, C-13A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

Type C-13A supersedes type C-13.

SHIPPING DATA: Shipped as a complete unit.

NAVY

The Navy procures this item to the Army specification.

F. S. S. C. NUMBER 88-T-1560

PROCUREMENT STATUS: Standard—

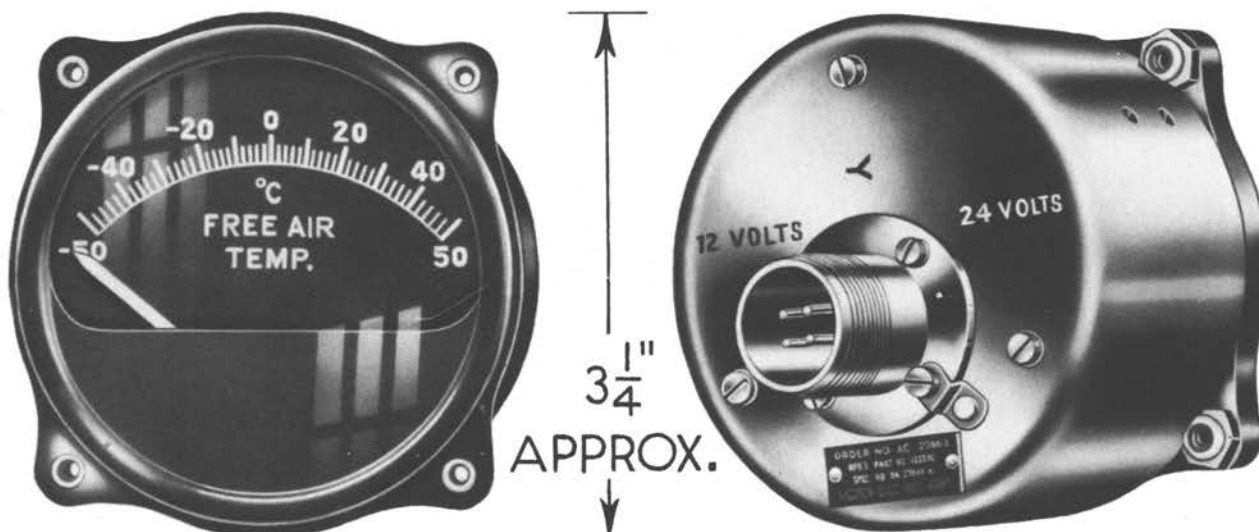
G. F. E.—Order through A. S. O. by
F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER:
106A/1128 (for C-13 only)

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Army Type	British Reference Number	Remarks
Rochester Mfg. Co.		1585	A-B	6000257123		C-13	106A/1128	Has short sunshade.
The Ohio Thermometer Co., Inc.		A-261	A	6000257122	05-40-16	C-13A		Combined sun shield and mounting rest.
Weston Electrical Instrument Co.	Type 227 L 001	96200	A	6000257125	05-40-9	C-13	106A/1128	Has short sunshade.
	Type 227 L 002	96317	A	6000247560		C-13A		Increased length of mounting threads for mounting through one inch wall thickness.
	Type 227 L 004	96362	A	6000247560		C-13A		Increased length of mounting threads for mounting through one inch wall thickness.
	Type 227 L 003	96356	N					Shield and mounting nut combined into one assembly.



INDICATOR—ELECTRIC THERMOMETER

ARMY TYPE C-10

NAMES: Electric thermometer indicator
Thermometer indicator
Dial thermometer
Electric thermometer

Free air thermometer
Ratio meter type thermometer
Resistance thermometer

DESCRIPTION: This is an electric ratio meter type thermometer indicator, used for registering free air temperature.

CHARACTERISTICS:

Markings	fluorescent	Weight	approximately 1½ pounds
Range	-50 to 50 degrees Centigrade	Dial size	approximately 2¾ inches
Voltage	12 or 24 volts, direct current	Depth	approximately 3½ inches
Electric receptacle	6 pins, AND10066-14S-2P	Diameter	approximately 3¼ inches
		Mounting	back mounting only

RELATIONSHIP OF PARTS: Used with: Any of the following short bulbs with AN connectors may be used in Weston assemblies numbers 106415 and 93144:

Weston part numbers—94176
94177
93195
106346 (AN5525-1)
Edison-Splitdorf part number—B-2201 (AN5525-1)

ARMY

A. E. REFERENCE NUMBER: 60-8627

SPECIFICATIONS:

General	94-27325A
Detail	94-27948A
Superseded	94-27948

TYPE DESIGNATION: C-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-40B-1

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number
Weston Electrical Instrument Corp.	Model 728, Type 28	102330	A-B	6000257040
	Model 728, Type 33	108303	A-B	



THERMOMETERS INSTRUMENTS—ENGINE



INDICATOR—SINGLE ELECTRIC THERMOMETER

ARMY TYPE C-11

NAMES: Single electric thermometer indicator

Thermometer indicator

Dial thermometer

Electric thermometer

Free air thermometer

Radio meter type thermometer

Resistance thermometer

DESCRIPTION: This is an electrical ratio meter type thermometer indicator, used for registering free air temperature.

CHARACTERISTICS:

Markings fluorescent

Voltage 24 volts, direct current

Range -45 to 45 degrees Centigrade

Electric receptacle 3 pins, AND10066-14S-1P

Dial size approximately 1 7/8 inches

Depth approximately 3 1/2 inches

Diameter approximately 2 3/8 inches

Weight approximately 1 pound

RELATIONSHIP OF PARTS:

Any of the following short bulbs with AN connectors may be used in Weston assemblies numbers 106415 and 93144:

Weston—part numbers 94176

94177

93195

106346 (AN5525-1)

Edison-Splitdorf—part number B-2201 (AN5525-1)

ARMY

A. E. REFERENCE NUMBER: 60-8651

SPECIFICATIONS:

General 94-27325-A

Detail 94-27949-A

Superseded 94-27949

TYPE DESIGNATION: C-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

Superseded by universal thermometer AN5790-6 A. E. Reference Number 61-8902

SHIPPING DATA: Shipped as a complete unit.

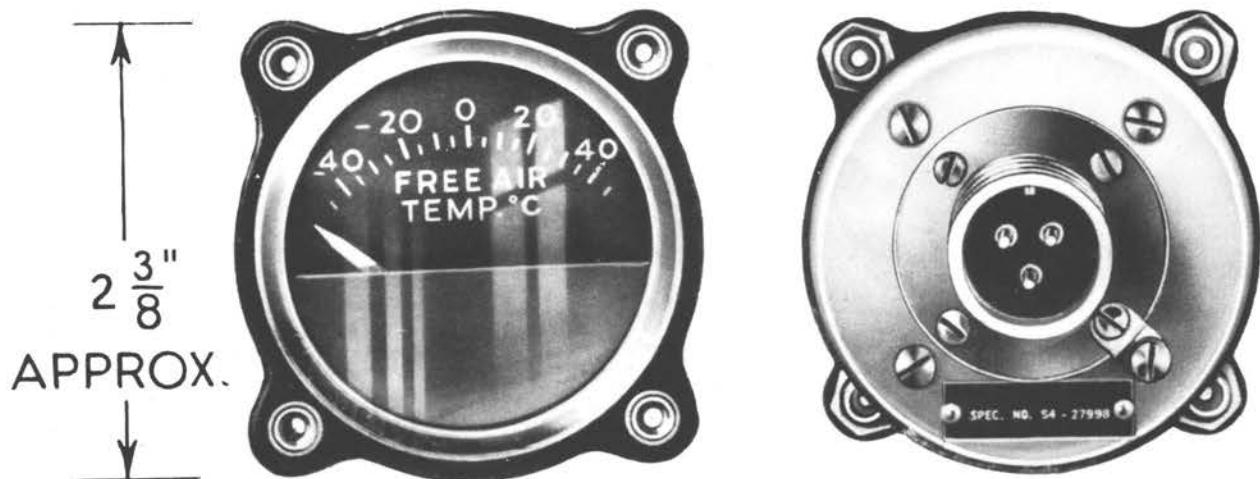
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type
Thomas A. Edison, Incorporated		33206	A-B	6000257085		106A/852	C-11
Weston Electrical Instrument Co.	Model 727, Type 25	102138	A-B	6000257090	05-40B-1	106A/852	C-11
	Model 727, Type 36	106497	A-B	6000257095	05-40B-1	106A/852	C-11
	Model 727, Type 33		B-C			106A/852	C-11

NOTE: Indicator AN5790-6, on page 89, is interchangeable with all thermometer indicators listed above, but requires an auxiliary plate to indicate function.



INDICATOR—ELECTRIC THERMOMETER

ARMY TYPE C-12

NAMES: Electric thermometer indicator
Thermometer indicator
Dial thermometer
Electric thermometer

Free air thermometer
Ratio meter type thermometer
Resistance thermometer

DESCRIPTION: This is an electrical ratio meter type thermometer indicator, used for registering free air temperature.

CHARACTERISTICS:

Markings.....	fluorescent
Range.....	—45 to 45 degrees Centigrade
Electric receptacle.....	3 pins, AND10066-14S-1P
Dial size.....	approximately 1 7/8 inches
Voltage.....	12 volts, direct current
Length.....	approximately 3 1/2 inches
Diameter.....	approximately 2 3/8 inches
Weight.....	approximately 1 pound

RELATIONSHIP OF PARTS: Used with:

Thermometer bulb and sunshield assemblies 93144 and 106415. Any of the following short bulbs with AN connectors may be used in Weston assemblies numbers 106415 and 93144:

Weston—part numbers 94176
94177
93195
106346 (AN5525-1)

Edison-Splitdorf part—number B-2201 (AN5525-1)

(Continued on Page 108)



INDICATOR — ELECTRIC THERMOMETER

(Continued from Page 107)

ARMY

A. E. REFERENCE NUMBER: 60-8676

SPECIFICATIONS:

General 94-27325
 Detail 94-27990
 Superseded 27990

TYPE DESIGNATION: C-12

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by universal thermometer AN5790-6, A. E. Reference Number 61-8902.

SHIPPING DATA: Shipped as a complete unit.

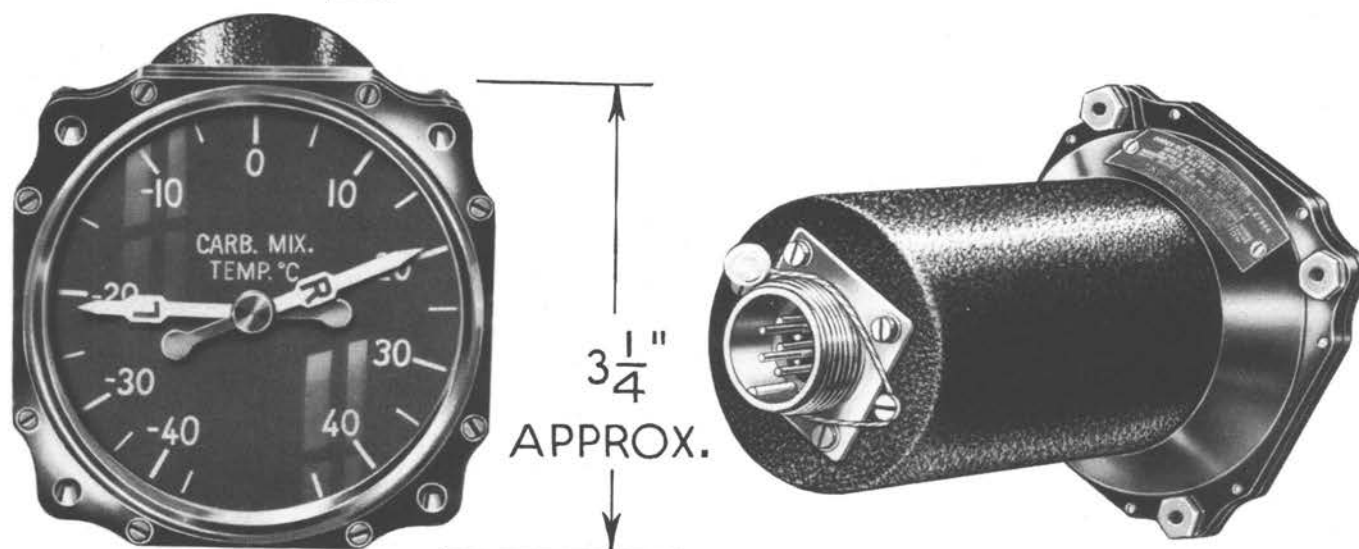
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Electrical Connector	Remarks
Weston Electrical Instrument Co.	Model 727, Type 26	102134	A-B	6000257110	05-408-1	106A/1114	C-12	AN3106-14S-1S	
	Model 727, Type 37	106498	A-B	6000257115	05-408-1	106A/1114	C-12	AN3106-14S-1S	

Note: Indicator AN5790-6, on page 89, is interchangeable with all thermometer indicators listed above, but requires an auxiliary plate to indicate function.

**INDICATOR—DUAL THERMOMETER****ARMY TYPE F-7**

NAMES: Dual thermometer indicator
Autosyn thermometer
Carburetor thermometer

Dial thermometer
Self-synchronous indicator
Thermometer; carburetor, type F-7

DESCRIPTION: Dual electrical self-synchronous (autosyn) thermometer indicator, which indicates carburetor air or fuel air mixture temperatures.

CHARACTERISTICS:

Markings	fluorescent
Range	—45 to 45 degrees Centigrade
Power supply	26 volts, 400 cycles
Electric receptacle	7 pin, AN3102-16S-1P
Weight	approximately 1 1/4 pounds
Dial size	approximately 2 3/4 inches
Depth	approximately 6 by 3 1/4 by 3 1/4 inches

RELATIONSHIP OF PARTS: Used with:

Two autosyn thermometer transmitters A. E. Reference Number 61-9152

ARMY

A. E. REFERENCE NUMBER: 61-9151

SPECIFICATIONS:

General	94-27864-A
Detail	94-27944
Superseded	27944

MANUFACTURER: Pioneer Instrument Division

PART NUMBER: 6007-31A-7-A

TYPE DESIGNATION: F-7

A. S. C. STOCK NUMBER: 6100262540

TECHNICAL ORDER NUMBER: 05-55B-1

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by universal thermometer AN5795-6, A. E. Reference Number 61-8911, but not interchangeable.

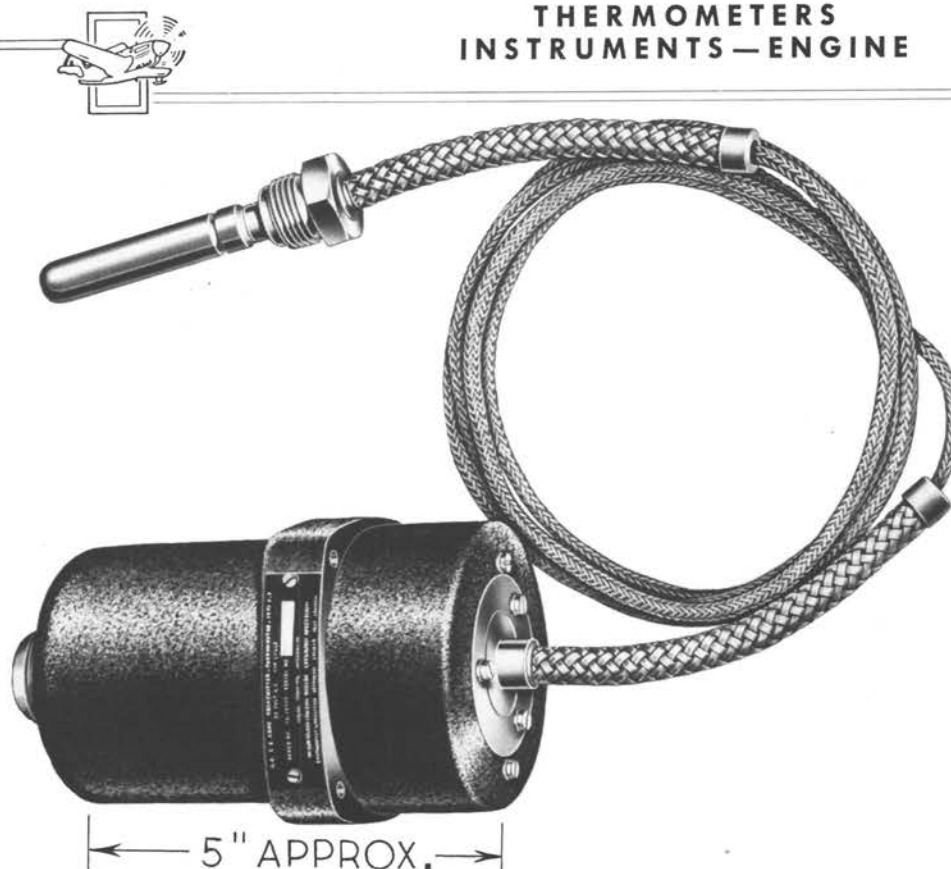
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/788

**TRANSMITTER — THERMOMETER****ARMY TYPE F-7**

NAMES: Autosyn thermometer transmitter
Thermometer transmitter

Autosyn thermometer

DESCRIPTION: Electrical autosyn thermometer transmitter, with vapor type bulb, capillary tube, and Bourdon type actuating mechanism, used for transmitting engine carburetor air or mixture to an indicator.

CHARACTERISTICS:

Range.....	—45 to 45 degrees Centigrade
Power source.....	26 volts, 400 cycles
Electric receptacle.....	4 pin, AN3102-14S-2P
Weight.....	approximately 1¼ pounds
Dimensions.....	approximately 6 by 2⅝ by 2⅝ inches

RELATIONSHIP OF PARTS: Used with:

Autosyn dual thermometer indicator..... A. E. Reference Number 61-9151

ARMY

A. E. REFERENCE NUMBER: 61-9152

SPECIFICATIONS:

General.....	94-27864-A
Detail.....	94-27944
Superseded.....	27944

MANUFACTURER: Pioneer Instrument Division

MANUFACTURER'S TYPE: 4456-5C-A5

TYPE DESIGNATION: F-7

A. S. C. STOCK NUMBER: 6100439260

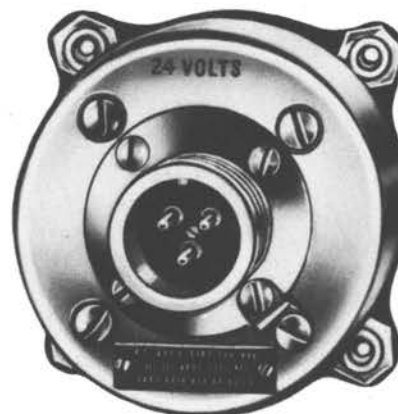
TECHNICAL ORDER NUMBER: 05-55B-1

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type F-10, which has been superseded by AN5795-6, A. E. Reference Number 61-8911.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.



← 2 $\frac{3}{8}$ " APPROX. →

INDICATOR—ELECTRIC THERMOMETER

ARMY TYPE F-8

NAMES: Electric thermometer indicator
Thermometer—indicator
Carburetor thermometer
Dial thermometer

Electric thermometer
Ratio meter type thermometer
Resistance thermometer

DESCRIPTION: Electric ratio meter type thermometer indicator, used for indicating carburetor air or mixture temperature.

CHARACTERISTICS:

Markings.....	fluorescent
Range.....	—45 to 45 degrees centigrade
Electrical receptacle.....	3 pins, AND10066-14S-1P
Weight.....	approximately 1 pound
Dial size.....	approximately 1 $\frac{7}{8}$ inches
Voltage.....	24 volts direct current
Depth.....	approximately 3 $\frac{1}{2}$ inches
Diameter.....	approximately 2 $\frac{3}{8}$ inches

RELATIONSHIP OF PARTS:

Any of the following short bulbs with AN connectors may be used for carburetor mixture temperatures:

Weston—part numbers 94176
94177
93195
106346 (AN5525-1)

Edison-Splitdorf—part number B-2201 (AN5525-1)

Any of the following long bulbs with AN connectors may be used for carburetor air temperatures:

Weston—part numbers 100732
101731
102172
103710
106347 (AN5525-2)

Edison-Splitdorf—part number B-2202 (AN5525-2)

Sutton-Horsley—part number R-322-3 (AN5525-2)

(Continued on Page 112)



INDICATOR—ELECTRIC THERMOMETER

(Continued from Page 111)

ARMY

A. E. REFERENCE NUMBER: 61-9178

SPECIFICATIONS:

General.....94-27325-A
 Detail.....94-27945-A
 Superseded.....94-27945

TYPE DESIGNATION: F-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Superseded by universal thermometer AN5790-6,
 A. E. Reference Number 61-8902.

SHIPPING DATA: Shipped as a complete unit.

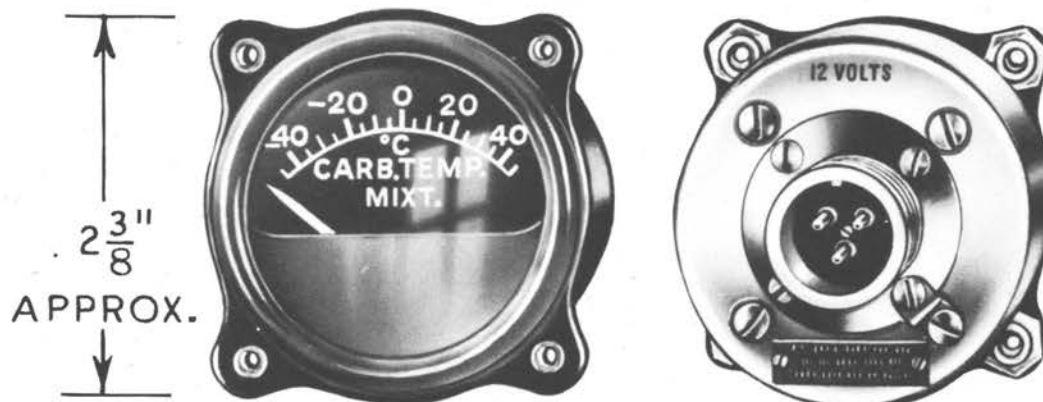
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Electrical Connector
Thomas A. Edison, Incorporated		33200	A-B-C	6100262560		106A/845	F-8	AN3106-14S-1S
Weston Electrical Instrument Corp.	Model 727, Type 27	102114	A-B	6100262570	05-40B-1	106A/845	F-8	AN3106-14S-1S
	Model 727, Type 46	108261	A-B	6100262855		106A/845	F-8	AN3106-14S-1S
	Model 727, Type 39		B-C			106A/845	F-8	AN3106-14S-1S

Note: Indicator AN5790-6, on page 89, is interchangeable with all thermometer indicators listed above, but requires an auxiliary plate to indicate function.



INDICATOR—ELECTRIC THERMOMETER

ARMY TYPE F-9

NAMES: Electric thermometer indicator
Thermometer indicator
Carburetor thermometer
Dial thermometer

Electrical thermometer
Ratio meter thermometer
Resistance thermometer

DESCRIPTION: Ratio meter type electric thermometer indicator is used for registering carburetor air or mixture temperatures.

CHARACTERISTICS:

Markings.....	fluorescent
Range.....	—45 to 45 degrees centigrade
Electrical receptacle.....	3 pins, AND10066-14S-1P
Weight.....	approximately 1 pound
Dial size.....	approximately 1 7/8 inches
Voltage.....	12 volts direct current
Depth.....	approximately 3 1/2 inches
Diameter.....	approximately 2 3/8 inches

RELATIONSHIP OF PARTS: Any of the following short bulbs with AN connectors may be used for carburetor mixture temperatures:

Weston—part numbers 93195, 94176, 94177

Edison-Splitdorf—part number 106346 (AN5525-1), B-2201 (AN5525-1)

Any of the following long bulbs with AN connectors may be used for carburetor air temperatures:

Weston—part numbers 100732, 101731, 102172, 103710, 106347 (AN5525-2)

Edison-Splitdorf—part number B-2202 (AN5525-2)

Sutton-Horsley—part number R-322-3 (AN5525-2)

(Continued on Page 114)

INDICATOR—ELECTRIC THERMOMETER

(Continued from Page 113)

ARMY

A. E. REFERENCE NUMBER: 61-9201

SPECIFICATIONS:

General.....94-27325-A
 Detail.....94-27991
 Superseded.....27991

TYPE DESIGNATION: F-9

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: Refer to chart
 PRODUCTION STATUS

Under procurement. Superseded by universal thermometer AN5790-6, A. E. Reference Number 61-8902.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

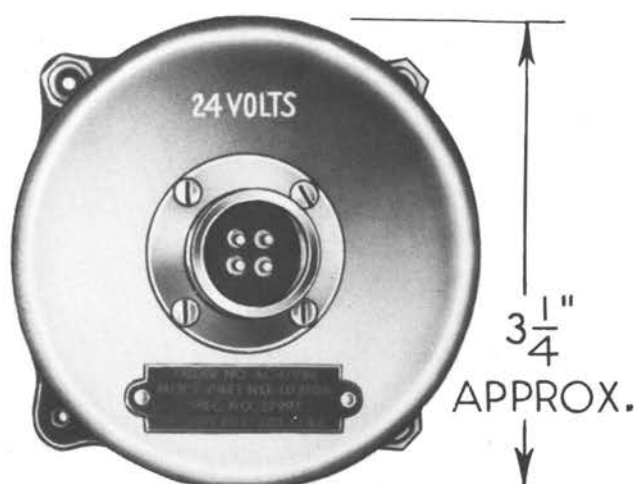
MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Electrical Connectors
Weston Electrical Instrument Corp.	Model 727, Type 28	102130	A-B	6100262630	05-40B-1	106A/1112	F-9	AN3106-14S-1S
	Model 727, Type 38	106499	A-B	6100262635	05-40B-1	106A/1112	F-9	AN3106-14S-1S

Note: Indicator AN5790-6, on page 89, is interchangeable with thermometer indicators listed above, but requires an auxiliary name plate to indicate function.



THERMOMETERS INSTRUMENTS—ENGINE



INDICATOR—DUAL ELECTRIC THERMOMETER ARMY TYPE F-10

NAMES: Dual electric thermometer indicator
Dual thermometer indicator
Carburetor thermometer

Dial thermometer
Ratio meter type thermometer
Resistance thermometer

DESCRIPTION: Electric ratio meter type thermometer indicator, used to indicate simultaneously, on a single dial, two carburetor air or mixture temperatures.

CHARACTERISTICS:

Markings.....	fluorescent
Range.....	—45 to 45 degrees Centigrade
Weight.....	approximately 1 pound
Dial size.....	approximately 2 3/4 inches
Voltage.....	24 volts direct current
Depth.....	approximately 3 1/2 inches
Diameter.....	approximately 3 1/4 inches
Electric receptacle.....	4 pins, AND10066-14S-2P
Electric connector.....	AN3106-14S-2S

RELATIONSHIP OF PARTS: Any of the following short bulbs with AN connectors may be used for carburetor mixture temperatures: Weston—part numbers 94176, 94177, 93195, 106346 (AN5525-1) Edison-Splitdorf—part number B-2201 (AN5525-1)
Any of the following long bulbs with AN connectors may be used for carburetor air temperatures: Weston—part number 100732, 101731, 102172, 103710, 106347 (AN5525-2) Edison-Splitdorf—part number B-2202 (AN5525-2) Sutton-Horsley—part number R-322-3 (AN5525-2)

(Continued on Page 116)



INDICATOR—DUAL ELECTRIC THERMOMETER

(Continued from Page 115)

ARMY

A. E. REFERENCE NUMBER: 61-9226

SPECIFICATIONS:

General.....94-27325-A
Detail.....94-27997
Superseded.....27997

TYPE DESIGNATION: F-10

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Superseded by universal thermometer AN5795-6,
A. E. Reference Number 61-8911.

SHIPPING DATA: Shipped as a complete unit.

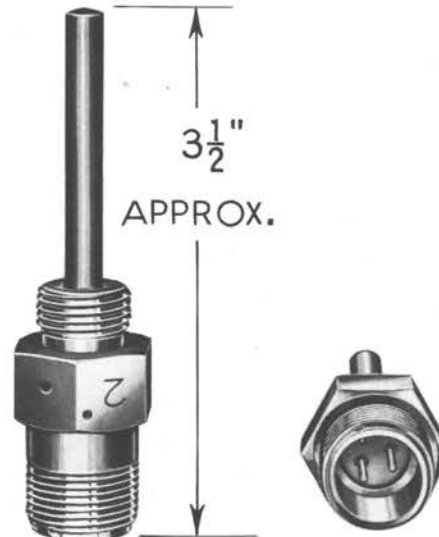
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Army Type	Electrical Connector
Thomas A. Edison, Incorporated		33208	A-B	6100262683		106A/1108	F-10	AN3106-14S-2S
The Hickok Electrical Instrument Co.	58-600	60011	A-B	6100262685	05-408-3	106A/1108	F-10	AN3106-14S-2S
Weston Electrical Instrument Corp.	Model 828, Type 1	103106	A-B	6100262690	05-408-1	106A/1108	F-10	AN3106-14S-2S

Note: Indicator AN5795-6, on page 89, is interchangeable with thermometer indicators listed above, but requires an auxiliary plate to indicate function.

**BULB—RESISTANCE THERMOMETER (SHORT)****AN5525-1****F. S. S. C. NUMBER 88-B-890**

NAMES: Resistance thermometer (short) bulb
Electrical resistance bulb
Resistance thermometer

Thermometer, resistance bulb
Thermometer bulb

DESCRIPTION: Electrical resistance type thermometer bulb, used with electrical bridge or ratio meter type indicators. It is used principally for detecting free air or low pressure carburetor temperatures.

CHARACTERISTICS:

Length.....approximately $1\frac{7}{8}$ inches
Weight.....approximately $\frac{1}{4}$ pound
Range.....—50 to 150 degrees Centigrade

RELATIONSHIP OF PARTS: Used with:

Single universal thermometer AN5790-6,
Dual universal thermometer AN5795-6,
Also C-8, C-10, C-11, C-12; F-8, F-9, F-10 if carburetor mixture is to be measured.

A. E. Reference Number 61-8902
A. E. Reference Number 61-8911

ARMY

A. E. REFERENCE NUMBER: 61-8906

SPECIFICATIONS:

Detail.....AN-GG-B-796
Superseded.....27321

AN DRAWING NUMBER: AN5525

AN PART NUMBER: AN5525-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail...AN-GG-B-796

AN DRAWING NUMBER: AN5525

AN PART NUMBER: AN5525-1

F. S. S. C. NUMBER: 88-B-890

PROCUREMENT STATUS: Standard—

G. F. E.—Order through A. S. O. by
F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Order Number	Army Technical Order Number	British Reference Number	Remarks
Edison-Splitdorf Corp.		B-2201	A-N-B	6100033263		106A/1236	Bulb AN5525-1
Weston Electrical Instruments Corp.	Model 11, Type 1	94176	A-B	6100040765	05-40B-1	106A/844	
	Model 11, Type 2	94177	A-B-C	6100033675		106A/404	
		93195	A	6000036150	05-40B-1		
	Model 17, Type 1	106346	A-N-B	6100040773		106A/1236	Bulb AN5525-1

THERMOMETERS INSTRUMENTS — ENGINE



BULB — RESISTANCE THERMOMETER (LONG)

AN5525-2

F. S. S. C. NUMBER 88-B-895

NAMES: Resistance thermometer (long) bulb
Electrical resistance bulb
Resistance thermometer

Thermometer, resistance bulb
Thermometer bulb

DESCRIPTION: Electrical resistance type thermometer bulb, used with electrical bridge or ratio meter type indicators. It is used principally for detecting temperatures in oil systems, engine coolant, or high pressure carburetors.

CHARACTERISTICS:

Length.....approximately 4 inches
Weight.....approximately 1/4 pound
Range.....—50 degrees to 150 degrees Centigrade

RELATIONSHIP OF PARTS: Used with:

Single universal thermometer AN5790-6, A. E. Reference Number 61-8902
Dual universal thermometer AN5795-6, A. E. Reference Number 61-8911
Also A-21, A-23, A-24, A-25; F-8, F-9, F-10 if carburetor air temperature is to be measured.

ARMY

A. E. REFERENCE NUMBER: 61-8901

SPECIFICATIONS:

Detail.....AN-GG-B-796
Superseded.....27321

AN DRAWING NUMBER: AN5525

AN PART NUMBER: AN5525-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail.....AN-GG-B-796

AN DRAWING NUMBER: AN5525

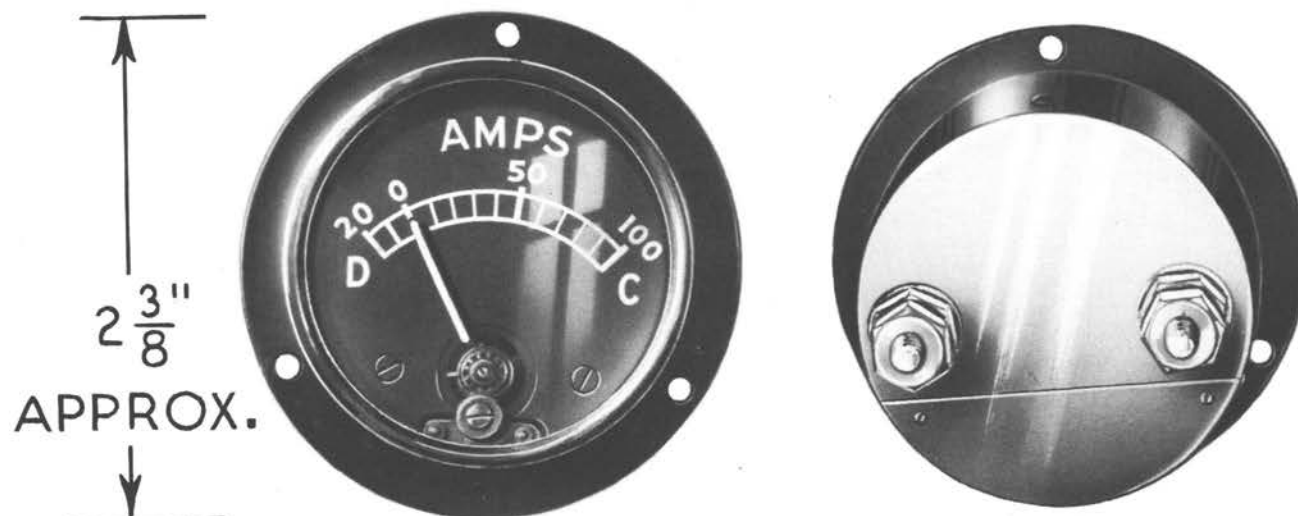
AN PART NUMBER: AN5525-2

F. S. S. C. NUMBER: 88-B-895

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part Number	Used By	Air Service Command Order Number	Army Technical Order Number	British Reference Number	Remarks
Edison-Splitdorf Corp.		B-2202	A-N-B	6100033270		106A/1244	Bulb AN5525-2
Weston Electrical Instrument Co.	Model 12, Type 1	102172	A-B	6100036023	05-40B-1	106A/861	
	Model 11, Type 3	100732	A	6100033273			
	Model 11, Type 4	101731	B-C			106A/838	
	Model 12, Type 2	103710	B-C			106A/861	
		106347	A-N-B	6100033000		106A/1244	Bulb AN5525-2
Sutton-Horsley Co., Ltd.		R-322-3	A-N-B			106A/1244	Bulb AN5525-2



AMMETER

ARMY TYPE D-2

NAMES: Ammeter with shunt
Direct current ammeter

External shunt ammeter (British)

DESCRIPTION: This ammeter is an instrument used to measure the amount of current, in amperes, flowing through a direct current electrical circuit. It must be used with an external shunt.

CHARACTERISTICS:

Dial size.....1 $\frac{7}{8}$ inches
Range.....—20-0-100 amperes, direct current
Markings.....fluorescent
Weight of indicator.....approximately $\frac{1}{2}$ pound
Overall dimensions of indicator.....approximately 2 $\frac{9}{16}$ by 2 $\frac{9}{16}$ by 2 inches

RELATIONSHIP OF PARTS: Used with:
100 ampere capacity shunt, in accordance with specification 32204.

ARMY

A. E. REFERENCE NUMBER: 61-350

SPECIFICATIONS:

General.....94-27226
Detail.....94-32191
Superseded.....32191

TYPE DESIGNATION: D-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped with or without shunt.

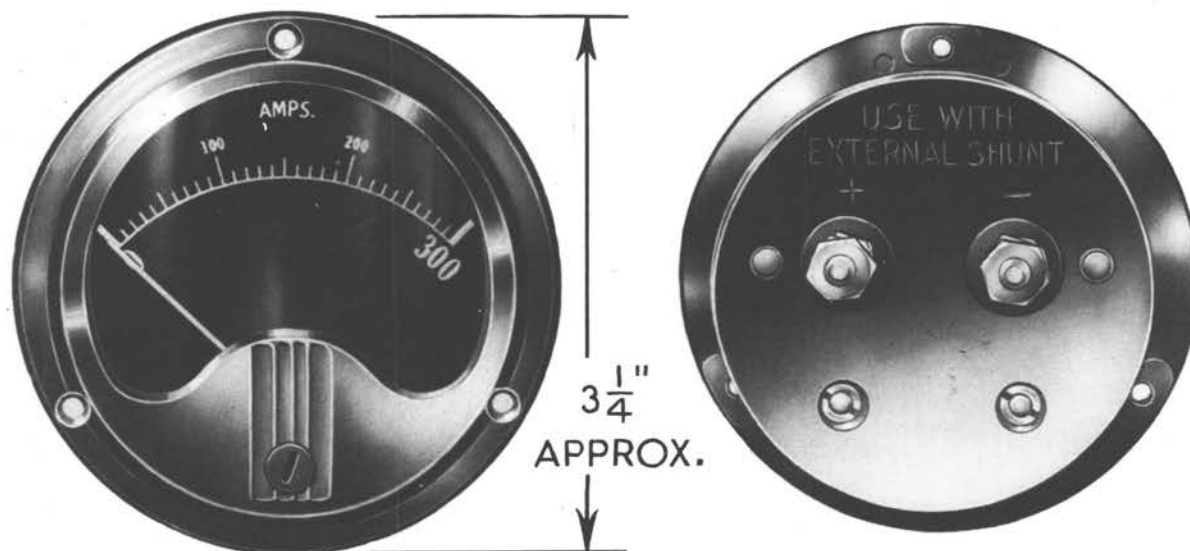
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 5
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification		Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
	Type	Part					
Hickok Electric Instrument Co.		5663	5663	A-B-C	6100020900	05-1-12 to 14	105U/74
Westinghouse Electric & Mfg. Co.	MX	1203126		A-B	6100023525	05-1-12 to 14	105U/61
Weston Electric Instrument Co.	506	92036	92036	A-B	6100021000	05-1-12 to 14	105U/74

AMMETERS INSTRUMENTS—ENGINE



AMMETER

ARMY TYPE E-1

NAME: External shunt ammeter (British)

DESCRIPTION: The ammeter is an instrument used to measure the amount of current, in amperes, flowing through a direct current electrical circuit. This type must be used with a 300 ampere capacity external shunt.

CHARACTERISTICS:

Dial size.....	1 ⁷ / ₈ inches
Range.....	0 to 300 amperes direct current
Markings.....	fluorescent
Weight.....	approximately 1 ¹ / ₂ pounds
Overall dimensions.....	approximately 3 ¹ / ₄ by 3 ¹ / ₄ by 1 ⁷ / ₈ inches

RELATIONSHIP OF PARTS: The A-1 ammeter must be used with the E-1 shunt, A. E. Reference Number 61-501.

ARMY

A. E. REFERENCE NUMBER: 61-500

SPECIFICATIONS:

General.....	94-27226
Detail.....	94-32173-A
Superseded.....	94-32173

TYPE DESIGNATION: E-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

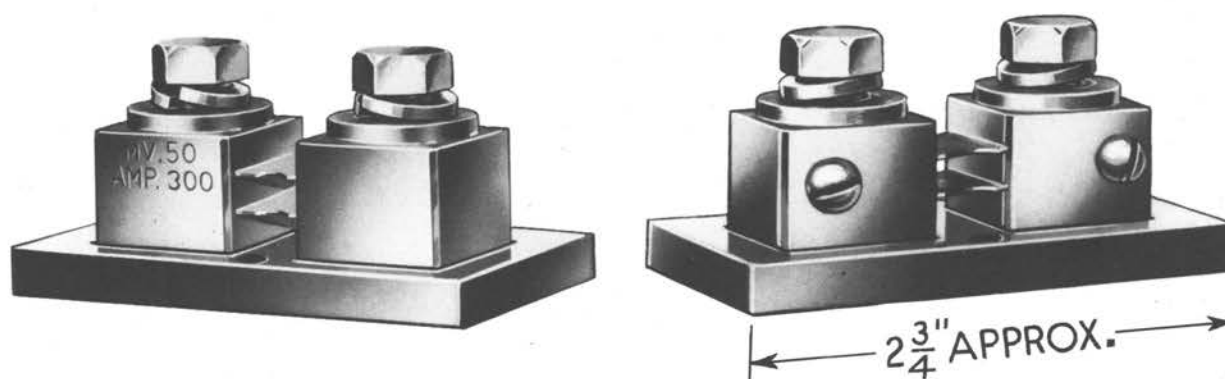
SHIPPING DATA: Shipped with or without shunt.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 5
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification		Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
	Type	Part					
Hickok Electric Instrument Co.		6206	6206	A-B	6100023000	05-1-12 to 14	105U/342
Westinghouse Electric & Mfg. Co.	VX	1205851	14-A-1088	A-B	6100023250	05-1-12 to 14	105U/342
Weston Electric Instrument Co.	301	90595	90595	A-B	6100023540	05-1-12 to 14	105U/342



SHUNT—AMMETER

ARMY TYPE E-1

NAMES: Ammeter shunt
External shunt (British)

DESCRIPTION: The shunt is an electrical conductor, mounted on an insulated base, connected in parallel with an ammeter in order to by-pass a definite proportion of the current to be measured by the ammeter. The use of a shunt makes it possible to construct the ammeter coils of small diameter wire, without large electrical losses, since only a minute portion of the line current actually passes through the instrument.

CHARACTERISTICS:

Voltage drop.....50 millivolts
Current capacity.....300 amperes
Weight.....approximately $\frac{3}{4}$ pound
Overall dimensions.....approximately $\frac{3}{4}$ inches by $1\frac{3}{4}$ inches by $1\frac{1}{16}$ inches

RELATIONSHIP OF PARTS: Used with:

Type E-1 ammeter.....A. E. Reference Number 61-500

ARMY

A. E. REFERENCE NUMBER: 61-501

SPECIFICATIONS:

Detail.....94-32204 (will be superseded by AN-S-36)
Superseded.....32204-B

TYPE DESIGNATION: E-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

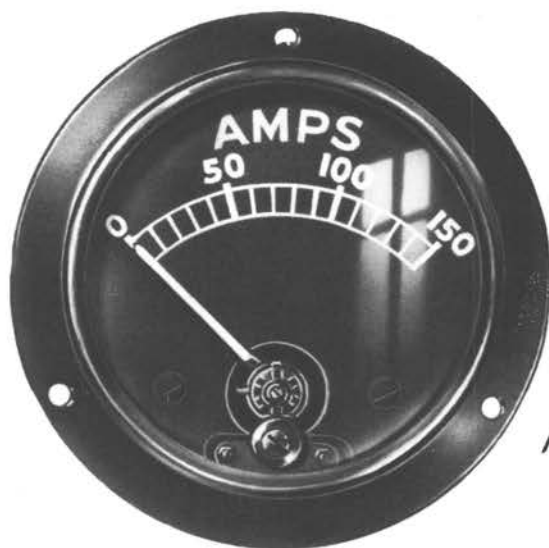
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Hickok Electric Instrument Co.	6206-1	6206-1	A-B	6100346250	05-1-12 to 14	105U/514
Westinghouse Electric & Mfg. Co.	1210196	6-B-2401	A-B	6100346780	05-1-12 to 14	105U/514
Weston Electric Instrument Co.	92039	92039	A-B		05-1-12 to 14	105U/514

AMMETERS INSTRUMENTS—ENGINE



APPROX.



AMMETER
ARMY TYPE F-1

NAMES: Ammeter with shunt
External shunt ammeter (British)

DESCRIPTION: The ammeter is an instrument used to measure the amount of current, in amperes, flowing through a direct current electrical circuit. This type must be used with a 150 ampere capacity external shunt.

CHARACTERISTICS:

Dial size.....1 7/8 inches
Range.....0 to 150 amperes
Markings.....fluorescent
Weight.....approximately 1 1/5 pounds
Overall dimensions.....approximately 2 9/16 by 2 9/16 by 1 7/8 inches

RELATIONSHIP OF PARTS:

The F-1 ammeter must be used with the shunt.....A. E. Reference Number 61-651

ARMY

A. E. REFERENCE NUMBER: 61-650

SPECIFICATIONS:

General.....94-27226
Detail.....94-32284
Superseded.....32284

TYPE DESIGNATION: F-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

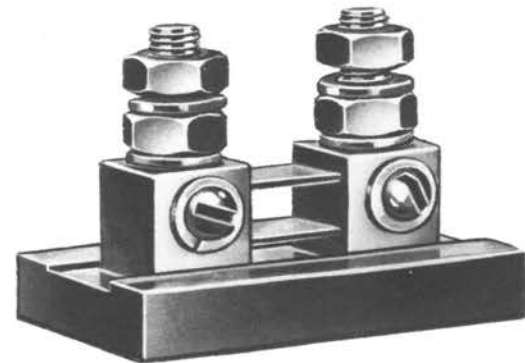
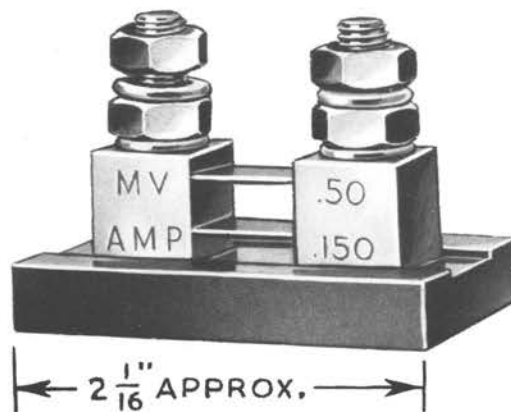
SHIPPING DATA: Shipped with or without shunt.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 5
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification		Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
	Type	Part					
Hickok Electric Instrument Co.		5669	5669	A-B			105U/211
Westinghouse Electric & Mfg. Co.	MX	1205852	14-A-1087	A-B	6100023590	05-1-12 to 14	105U/211
Weston Electric Instrument Co.	506	102491	102491	A-B	6100023580	05-1-12 to 14	105U/211



SHUNT—AMMETER

ARMY TYPE F-1

NAMES: Ammeter shunt
External shunt (British)

DESCRIPTION: The shunt is an electrical conductor, mounted on an insulated base. It is connected in parallel with an ammeter, in order to by-pass a definite proportion of the current to be measured by the ammeter. The use of a shunt makes it possible to construct the ammeter coils of small diameter wire without large electrical losses, since only a minute portion of the line current actually passes through the instrument.

CHARACTERISTICS:

Overall dimensions.....approximately $2\frac{1}{16}$ by $1\frac{1}{4}$ by $1\frac{7}{16}$ inches
Weight.....approximately $\frac{1}{2}$ pound
Voltage drop.....50 millivolts
Current capacity.....150 amperes

RELATIONSHIP OF PARTS: Used with:

Army type F-1 ammeter.....A. E. Reference Number 61-650

ARMY

A. E. REFERENCE NUMBER: 61-651

SPECIFICATIONS:

Detail.....94-32204 (will be superseded by AN-S-36)
Superseded.....32204B

TYPE DESIGNATION: F-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped with or without ammeter.

NAVY

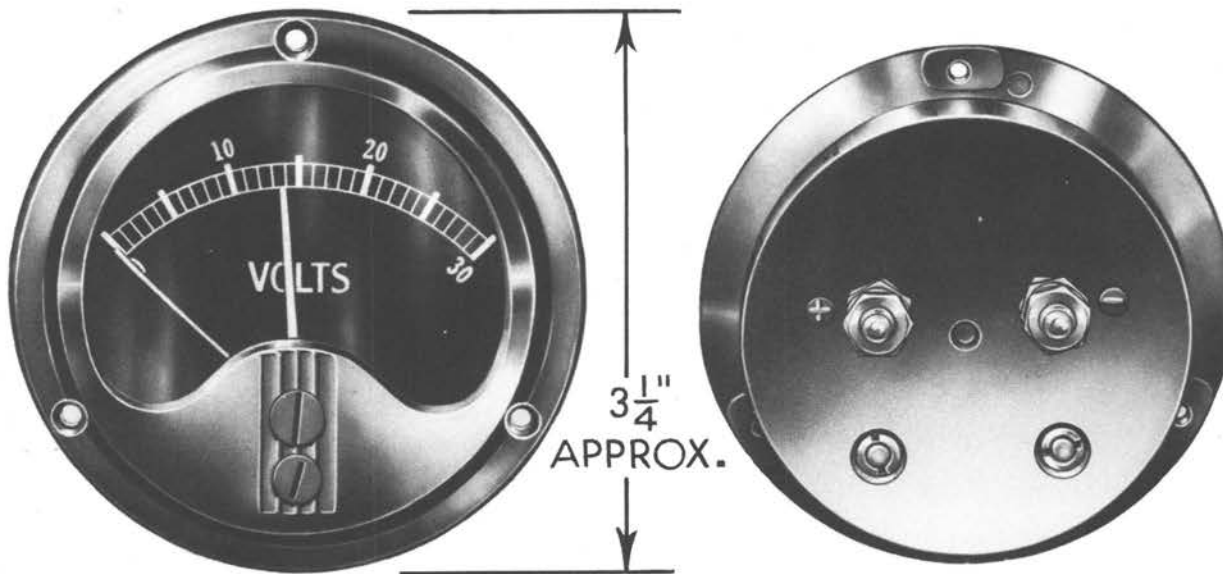
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Westinghouse Electric & Mfg. Co.	92431	92431	A-B	6100346070	05-1-12 to 14	105U/510
Weston Electric Instrument Co.	1210197	6-B-2396	A-B	6100346800	05-1-12 to 14	105U/510



VOLTMETERS INSTRUMENTS—ENGINE



VOLTMETER—AIRCRAFT ARMY TYPE B-1

NAMES: Aircraft Voltmeter
Voltmeter

DESCRIPTION: The B-1 voltmeter is a self-contained electrical instrument, designed to indicate direct current voltages. The indicator dial is graduated in volts.

CHARACTERISTICS:

Dial size.....	1 7/8 inches
Range.....	0 to 30 volts
Lighting.....	fluorescent
Weight.....	approximately 1 pound
Overall dimensions.....	approximately 3 1/4 by 3 1/4 by 2 1/2 inches

ARMY

A. E. REFERENCE NUMBER: 61-9650

SPECIFICATIONS:

General.....	94-27226
Detail.....	94-32172-B
Superseded.....	94-32172-A

TYPE DESIGNATION: B-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

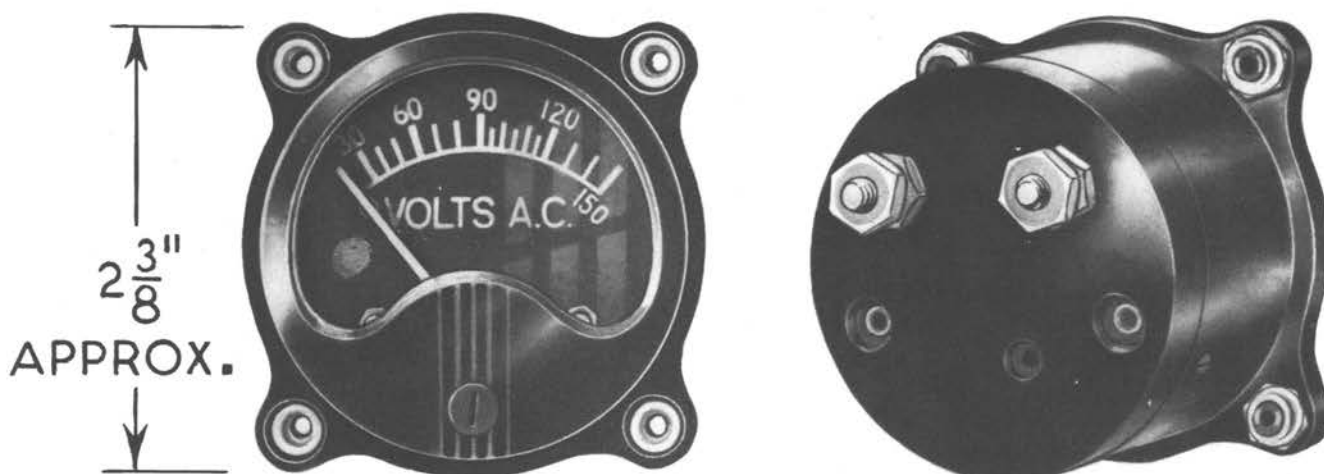
SHIPPING DATA: Shipped as a complete unit. There are approximately 30 units to a shipping carton weighing 27 pounds.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 5
ALL MODELS BELOW ARE INTERCHANGEABLE

Manufacturer	Manufacturer's Model Identification Type	Manufacturer's Model Part	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Hickok Electrical Instrument Co.		6207	6207	A-B-C	6100472200		105U/79	
Westinghouse Electric & Manufacturing Co.	VX	1205853	14-A-1086	A-B	6100472650	05-1-12 to 14	105U/79	
Weston Electric Instrument Co.	301	92464	92464	A-B	6100472250	05-1-12 to 14	105U/79	
	301	90254	90254	A-B	6100472500		105U/79	Superseded by Weston part number 92464


VOLTMETER—AIRCRAFT
ARMY TYPE C-1
N. A. F. NUMBER 1091E-150
A. S. O. STOCK NUMBER R17-V-890

NAMES: Aircraft voltmeter
Voltmeter

Voltmeter—alternating current

DESCRIPTION: The C-1 voltmeter is a self contained instrument, designed to measure 400 cycle alternating current voltages.

CHARACTERISTICS:

Dial size.....1 7/8 inches
Range.....0 to 150 volts
Lighting.....fluorescent
Weight.....approximately 1 pound
Overall dimensions.....approximately 3 1/4 by 3 1/4 by 2 1/2 inches

ARMY

A. E. REFERENCE NUMBER: 61-9700

SPECIFICATIONS:

Detail.....94-32382
Superseded.....32382

MANUFACTURER'S DESIGNATION:

Westinghouse Electric and Manufacturing Company, Type AA, model 1209236, drawing 12-A-2548

TYPE DESIGNATION: C-1

A. S. C. STOCK NUMBER: 6100472800

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: General.....M-474

N. A. F. DRAWING NUMBER: 1091

N. A. F. PART NUMBER: 1091E-150

A. S. O. STOCK NUMBER: R17-V-890

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by stock number.

BRITISH

BRITISH REFERENCE NUMBER: 105U/1153

ACCELEROMETERS INSTRUMENTS—FLIGHT



3 1/4"
APPROX.



ACCELEROMETER—AIRCRAFT

AN5745-2 FORMER ARMY TYPE B-3 F. S. S. C. NUMBER 88-A-140

NAMES: Aircraft accelerometer

Maximum indicating accelerometer

DESCRIPTION: An accelerometer is an instrument used to measure the vertical acceleration of an airplane. Its mechanism consists of weights mounted at the ends of lever arms, the movement of which is confined to a vertical plane. Acceleration along the vertical axis of the airplane causes movement of the weights, which is transmitted to the three pointers of the dial.

The main pointer indicates instantaneous acceleration. The two auxiliary pointers, until reset, remain at the maximum positive or negative readings attained by the main pointer.

The dial is calibrated in g-units, one "g" being the acceleration due to gravity.

The dial markings for the Army type B-3 and AN5745-2 instruments are in fluorescent luminescent material; those for AN5745-1 were in radioactive fluorescent material. AN5745-1 is now obsolete.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 3 1/2 inches
Dial diameter.....	2 3/4 inches
Lighting.....	fluorescent markings
Weight.....	approximately 1 1/4 pounds
Range.....	-5 g to +12 g units

ARMY

A. E. REFERENCE NUMBER: 60-200

SPECIFICATIONS:

Detail.....AN-GG-A-96

Superseded.....94-27960-B

AN DRAWING NUMBER: AN5745

AN PART NUMBER: AN5745-2

TYPE DESIGNATION: Former type B-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....AN-GG-A-96

Superseded.....BuAer Spec. SQ-46

AN DRAWING NUMBER: AN5745

AN PART NUMBER: AN5745-2

F. S. S. C. STOCK NUMBER: 88-A-140

PROCUREMENT STATUS: Standard G.F.E.

—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Kollsman Instrument Division	691BK-01	A-B-C	6000001290		106A/1109
	691BK-03	A-B		05-20-23	106A/1109
	691CK-01	A-B			106A/1109
	691K-02	A-N-B	6000001300		106A/1109
	691K-01	A-N			
	691CK-04	A-B		05-20-23	106A/1109
Pioneer Instrument Division	3413-2D-A1	A-N			
	3413-2E-A1	C			
Jaeger Watch Co.	4990	A-B	6000001315		106A/1109



AIRSPEED INDICATORS

The airspeed indicator is an instrument which shows the speed of an airplane through the surrounding air. The actual speed of the airplane relative to the ground can be determined by applying suitable corrections to the indicated airspeed.

In determining the airspeed, the instrument utilizes the principle that the differential between the pitot and static air pressure is a direct indication of velocity. The source of the pitot and static air pressures is a pitot-static airspeed tube, or a combination of a pitot tube and a flush type static tube.

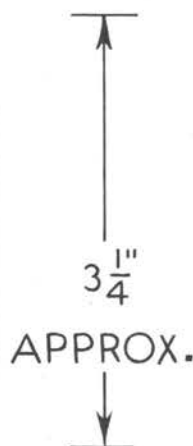
Pitot, or impact pressure, which is the result of the airplane's motion through the air, is delivered to a sealed diaphragm capsule inside the indicator. Static pressure, which is the atmospheric pressure existing at the airplane's altitude, is found outside the diaphragm capsule, but inside the airtight case. When there is a difference in the two pressures, due to motion through the air, the diaphragm expands or contracts. This movement is translated into angular motion of the pointer by a linkage system. The pointer moves around a dial calibrated in units of miles per hour.

Standard Army airspeed indicators are of two general types: the low-range and the high-range type. The low-range type has a pointer which makes one revolution over the total range of the dial with a maximum reading of 300 miles per hour. The high-range type indicates a maximum airspeed of 500 or 700 miles per hour. The sensitive indicator is a high-range type with a pointer which makes one revolution for each hundred miles per hour, and has an inner dial to indicate hundred-mile units.

Since it is the usual practice to connect all instruments utilizing static pressure (airspeed indicator, rate-of-climb indicator and altimeter) to a common manifold, the location of the connection to the instrument is important when interchanging instruments. The Army-Navy standard airspeed indicator case, AN5759, has the pitot connection in the center of the back of the instrument and a static connection on each side. These will supersede the present Army instruments, which have the static connection on the right-hand side, on the back of the instrument and the Navy instruments which have it on the back, left-hand side. In addition, Navy indicator dials are calibrated in knots. Because of these differences, Army airspeed indicators and Navy airspeed indicators are not considered interchangeable.



AIRSPEED INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—AIRSPEED

ARMY TYPE B-8

NAMES: Airspeed indicator
Indicator assembly—airspeed

Indicator—airspeed (aircraft) pitot-static

DESCRIPTION: The Army type B-8 airspeed indicator is a differential pressure measuring instrument used to indicate the speed of the airplane in flight. The dial face is designed for external fluorescent lighting.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 2 1/8 inches
Weight.....	approximately 1 pound
Range.....	20 to 200 miles per hour
Dial size.....	2 3/4 inches diameter
Lighting.....	fluorescent and radioactive luminous markings
Connections.....	1/8 inch internal pipe thread

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-3900

SPECIFICATIONS:

General.....	94-27187
Detail.....	94-27974-B

TYPE DESIGNATION: B-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

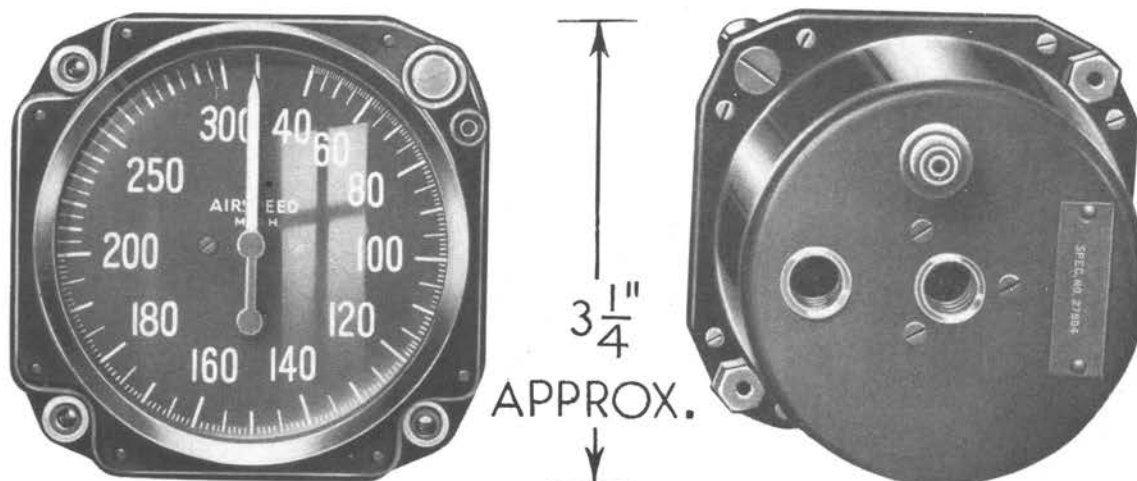
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
United States Gauge Co.	AW-23/4-16-AH	A-B	6000176785	05-10-2	106A/849
	AW-23/4-16-AQ	A-B		05-10-2	106A/849
Pioneer Instrument Division	1426-2J-A1	A-B	6000176725		106A/849
	1426-2D-A1	C			
Kollsman Instrument Division	586K-027	A			
	657BK-0146	C			



INDICATOR—AIRSPEED

ARMY TYPE C-7

NAMES: Airspeed indicator
Indicator assembly—airspeed

Indicator—airspeed (aircraft) pitot-static

DESCRIPTION: The Army type C-7 airspeed indicator is a differential pressure measuring instrument, covering its full speed range in one revolution of the pointer. It has a marker which indicates maximum permissible diving speed of the airplane in which it is installed.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 2 1/8 inches
Weight	approximately 3/4 pound
Range	40 to 300 miles per hour
Dial size	2 3/4 inches diameter
Lighting	individual 3 volt rim lamp
Dial markings	radioactive luminous material
Connections	1/8 internal pipe thread with type 81F fittings installed

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4000

SPECIFICATIONS:

General	94-27187
Detail	94-27804
Superseded	27804

TYPE DESIGNATION: C-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-14 airspeed indicator.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	1403-1N-B1	A-B	6000180500	05-10-2	106A/891
	1403-1C-E1	A-B			106A/891
	1403-1B-C1	C			
	1403-1N-D1	C			
U. S. Gauge Co.	AW-23/4-12	A-B	6000180250	05-10-2	106A/891
	AW-23/4-12-B	A-B			106A/891
Kollsman Instrument Division	586S-0110	A			



AIRSPEED INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—AIRSPEED

ARMY TYPE C-14

NAMES: Airspeed indicator
Indicator assembly—airspeed

Indicator—airspeed (aircraft) pitot-static

DESCRIPTION: The Army type C-14 airspeed indicator is a differential pressure measuring instrument used to indicate the speed of the airplane through the air. The dial face is graduated throughout the range of 40 to 300 miles per hour.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 2 1/8 inches
Weight.....	approximately 3/4 pound
Range.....	40 to 300 miles per hour
Dial.....	2 3/4 inches diameter
Lighting.....	fluorescent and fluorescent radioactive markings
Connections.....	1/8 inch internal pipe threads

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4200

SPECIFICATIONS:

General.....	94-27187
Detail.....	94-27952-B
Superseded.....	94-27952-A

TYPE DESIGNATION: C-14

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

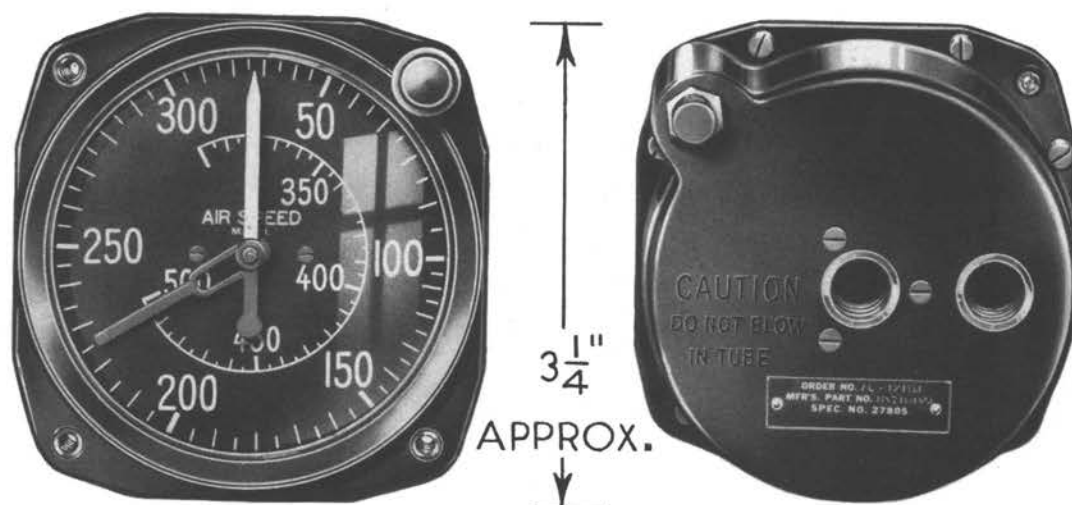
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
United States Gauge Co.	AW-23 1/4-16-U	A-B	6000182725	05-10-2	106A/921
Pioneer Instrument Division	1426-1Z-A1	A-B	6000182750	05-10-4	106A/921
	1426-1AE-A1	C		05-10-2	
	1426-1AD-A1	C			
	1426-1B-A1	C			
King-Seeley Corp.	32450	A-B	6000182755		106A/921
Kollsman Instrument Division	586BK-0110	A-B	6000182735		106A/921
	586BK-0148	C			



AIRSPEED INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—AIRSPEED

ARMY TYPE D-4

NAMES: Airspeed indicator

Indicator—airspeed (aircraft) pitot-static

Indicator assembly—airspeed

DESCRIPTION: The Army type D-4 airspeed indicator is a differential pressure measuring instrument, covering its full speed range in one and two-thirds revolutions of the pointer. It has a marker which indicates the maximum permissible diving speed of the airplane in which it is installed.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 3 1/16 inches
Weight	approximately 3/4 pound
Range	50 to 500 miles per hour
Dial	2 3/4 inches diameter
Lighting	individual 3 volt rim lamp
Dial markings	radioactive luminous material
Connections	1/8 inch internal pipe threads

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube, or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4400

SPECIFICATIONS:

General	94-27187
Detail	27805-A

TYPE DESIGNATION: D-4

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type D-7 airspeed indicator.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Kollsman Instrument Division	586S-024	A-B	6000184750	05-10-2	106A/83
United States Gauge Co.	AW-23 1/4-13	A-B	6000184250	05-10-4	106A/83
	AW-23 1/4-13-C*	A		05-10-2	
Pioneer Instrument Division	1403-4E-D1	A-B			106A/83
	1406-4E-A1	A-B			106A/83

*Static connection rotated 180°.

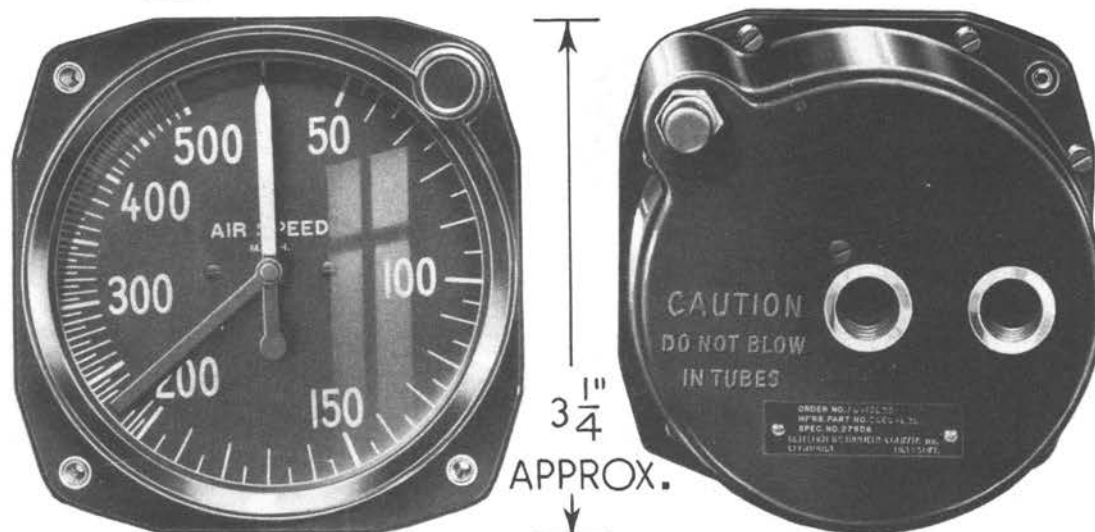
TYPE INTERCHANGEABILITY

A. A. F. Type
D-6

One revolution of pointer for entire range.



AIRSPEED INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—AIRSPEED

ARMY TYPE D-6

NAMES: Airspeed indicator
Indicator assembly airspeed

Indicator—airspeed (aircraft) pitot-static

DESCRIPTION: The Army type D-6 airspeed indicator is a differential pressure measuring instrument, covering its full speed range in one revolution of the pointer. It has a marker which indicates maximum permissible diving speed of the airplane in which it is installed.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 2 1/16 inches
Weight.....	approximately 1/2 pound
Range.....	50 to 500 miles per hour
Dial.....	2 3/4 inch diameter
Lighting.....	individual 3 volt rim lamp
Connections.....	1/8 inch internal pipe threads with type 811 fittings installed
Dial markings.....	radioactive luminous material

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube, or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4600

SPECIFICATIONS:

General.....	94-27187
Detail.....	94-27906-A

TYPE DESIGNATION: D-6

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type D-7 airspeed indicator.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

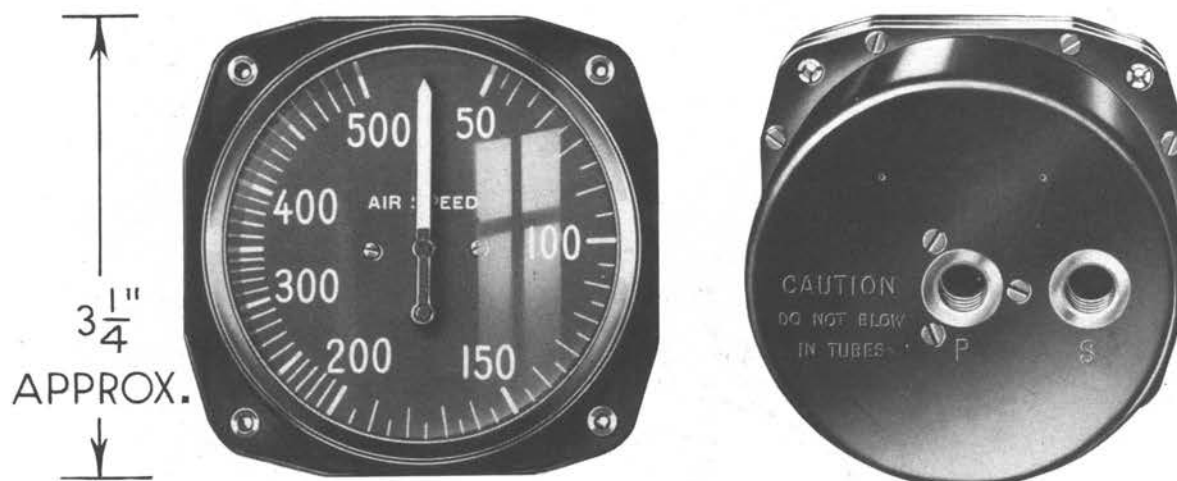
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Kollsman Instrument Division	586S-025	A-B	6000185450	05-10-4 05-10-2	106A/541
United States Gauge Co.	AW-2 3/4-27	A			

TYPE INTERCHANGEABILITY

A. A. F. Type
D-4

1 2/3 revolutions of pointer to cover entire speed range.



3 1/4"
APPROX.

INDICATOR—AIRSPEED

ARMY TYPE D-7

NAMES: Airspeed indicator
Indicator assembly—airspeed

Indicator—airspeed (aircraft) pitot-static

DESCRIPTION: The Army type D-7 airspeed indicator is a differential pressure measuring instrument used to indicate the speed of the airplane through the air. The dial face contains graduations from 50 to 500 miles per hour; the graduations from 50 to 200 m.p.h. are open scale marking, and those from 200 to 500 are condensed scale markings.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 3 1/16 inches
Weight.....	approximately 1 pound
Range.....	50 to 500 miles per hour
Dial size.....	2 3/4 inches diameter
Lighting.....	radioactive luminous markings
Connections.....	1/8 inch internal pipe thread with type 811 fittings installed.

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4800

SPECIFICATIONS:

General.....	94-27187
Detail.....	94-27953

TYPE DESIGNATION: D-7

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Will be superseded by Army type F-2 airspeed indicator.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

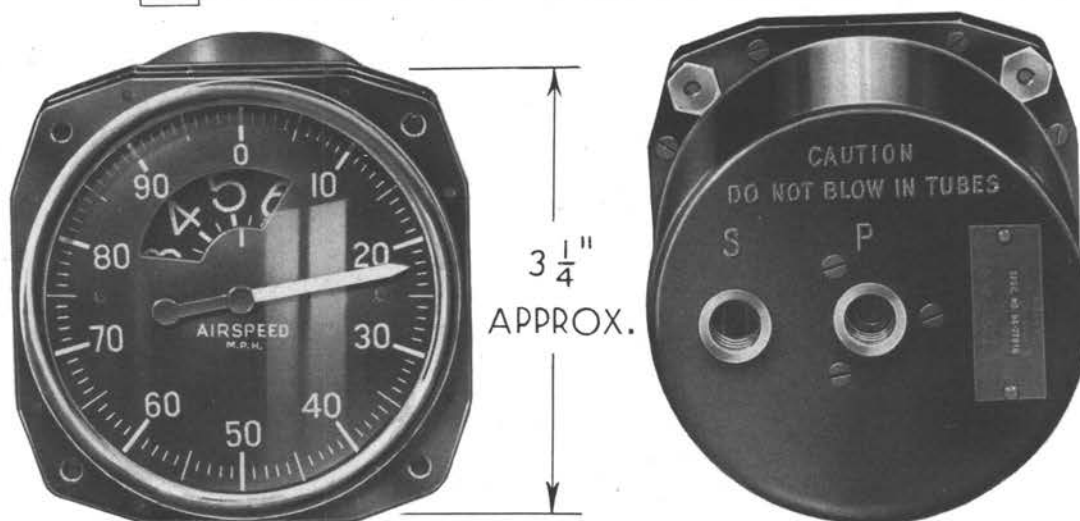
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Kollsman Instrument Division	586K-026	A-B-C	6000185530	05-10-4 05-10-2	106A/1065
	586K-028	A-B	6000185535		106A/1065
	586BK-029	A-B			106A/1065
	586K-018	C			
	657BK-0126	C			
	657BK-0137*	C			
United States Gauge Co.	AW-2 3/4-16V	A-B			106A/1065

*Has radioactive luminous and fluorescent dial markings.



AIRSPEED INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—AIRSPEED

ARMY TYPE F-1

NAMES: Airspeed indicator

Indicator assembly—airspeed

Indicator—airspeed (aircraft) pitot-static

Sensitive airspeed indicator

DESCRIPTION: The Army type F-1 is a sensitive airspeed indicator. The pointer makes one revolution every hundred miles per hour. A smaller inner dial indicates hundreds of miles per hour.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 3 1/8 inches
Weight	approximately 1 pound
Range	50 to 700 miles per hour
Dial size	2 3/4 inches diameter
Lighting	fluorescent and fluorescent radioactive markings
Connections	1/8 inch internal pipe thread

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube, or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4900

SPECIFICATIONS:

General	94-27187
Detail	94-27916-A

TYPE DESIGNATION: F-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

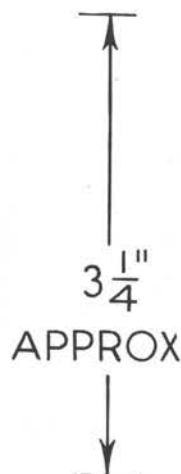
Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	1432-22B-A1	A-B	6000186850	05-10-4	106A/1110
	1432-22B-A-A1	A-B		05-10-2	106A/1110
	1432-22C-A-A1	C			
Kollsman Instrument Division	739K-03	A-B	6000174770		106A/1110
	739K-07	B-C			106A/1110
United States Gauge Co.	AW-2 3/4-31-C	A-B	6000185595		106A/1110

TYPE INTERCHANGEABILITY

A. A. F. Type
F-2
F-3

Non-sensitive type, case depth 2 1/16 inches.

Non-sensitive type, case depth 2 inches. Fluorescent markings only, for night fighters.

**INDICATOR—AIRSPEED****ARMY TYPE F-2**

NAMES: Airspeed indicator
Indicator assembly—airspeed

Indicator—airspeed (aircraft) pitot-static

DESCRIPTION: The Army type F-2 airspeed indicator is a differential pressure measuring instrument, used to indicate the speed of the airplane through the air. The dial face is designed for external fluorescent lighting, and has a range of 50 to 700 miles per hour.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 2 1/8 inches
Weight.....	approximately 1 pound
Range.....	50 to 700 miles per hour
Dial size.....	2 3/4 inches diameter
Lighting.....	fluorescent and fluorescent radioactive markings
Connections.....	1/8 inch internal pipe thread

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube, or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4925

SPECIFICATIONS:

General.....	94-27187
Detail.....	94-27335A

TYPE DESIGNATION: F-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	1426-37A-A6	A-B	6000186920	05-10-4	106A/1087
	1426-37F-A6	A-B		05-10-2	
Kollsman Instrument Division	586BK-0142	A-B	6000186905		106A/1087
	586BK-0149	B-C			
The Lackner Co.	PE-22251-2	A-B	6000186910	05-10-4 05-10-2	106A/1087

TYPE INTERCHANGEABILITY

A. A. F. Type
F-1

Sensitive type. Case depth 3 1/8 inches.



INDICATOR—AIRSPEED

ARMY TYPE F-3

NAMES: Airspeed indicator
Indicator assembly—airspeed

Indicator—airspeed (aircraft) pitot-static

DESCRIPTION: The Army type F-3 airspeed indicator is a differential pressure measuring instrument, used to indicate the speed of the airplane through the air. The dial face is graduated throughout the range, from 50 to 700 miles per hour. The markings are of fluorescent material only, since the indicator is for use on night fighter aircraft.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 2 1/8 inches
Weight.....	approximately 1 pound
Range.....	50 to 700 miles per hour
Dial size.....	2 3/4 inches diameter
Lighting.....	fluorescent markings

RELATIONSHIP OF PARTS: Used with:

Pitot-static airspeed tube, or a combination of a pitot airspeed tube and a flush static airspeed tube.

ARMY

A. E. REFERENCE NUMBER: 60-4950

SPECIFICATIONS:

General.....	94-27187
Detail.....	94-27406

TYPE DESIGNATION: F-3

MANUFACTURER: Pioneer Instrument Division of Bendix Aviation Corp.

MANUFACTURER'S PART NUMBER: 1426-37E-A6

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1405



AIRSPEED TUBES

Airspeed tubes are used to furnish impact and static pressures for the operation of various aircraft flight instruments. Impact pressure is the resistance encountered by an object moving through the air. Static pressure is the atmospheric pressure of the air at whatever altitude the airplane may be flying. Static pressure is supplied for the accurate operation of the altimeter and rate-of-climb indicator. The pressure differential between the impact and static pressures operates the airspeed indicator.

In order to obtain the two different air pressures, there must be two air inlets. These are generally combined in a single unit known as the pitot-static tube.

One type consists of a metal casing, inside of which is a pitot tube with its forward end open to receive the full impact pressure. Around the side of the casing, usually at the top and bottom, are small holes which admit static air. To prevent the formation of ice in and around the tube, this type is electrically heated.

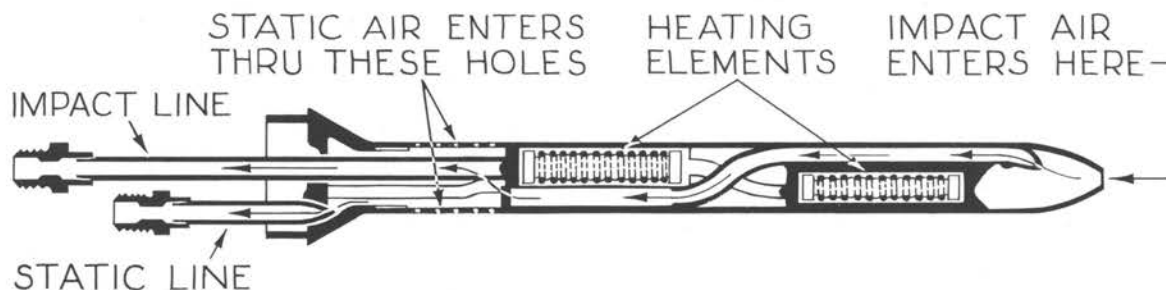
Another type of airspeed tube employs two pieces of tubing of the same size. One, having an open end, measures the impact pressure. The other, having a closed end with holes along the side, measures the static pressure. This type is unheated.

More recent installations completely separate the two sources of air pressure. The impact pressure is obtained from a heated tube which has its open end pointing forward. The static pressure is obtained from a flush type static tube, which is located on the side of the fuselage. The static tube is a small circular flange with several small holes in it, and it mounts flush with the surface of the fuselage. Two of these are usually used for each installation, one on each side of the fuselage, to offset inaccurate readings which may be caused by air blowing directly into one tube in case of strong side winds.

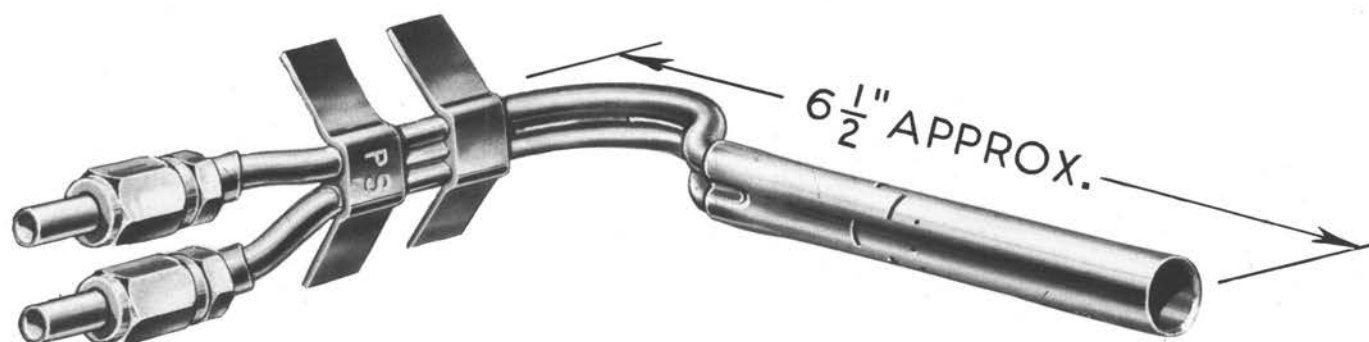
Airspeed tubes are mounted on the leading edge of the wing or on the nose of the airplane. This is done so that the air pressure will not be disturbed by the slipstream or movement of the airplane.

The sources of impact and static pressure are connected to the aircraft instruments by air tight tubing.

Methods of installation of pitot tube and static tube combinations are specified in Army-Navy Specification AN-I-4 and Army Air Forces Specification 27380-A.



CUTAWAY VIEW OF A PITOT-STATIC TUBE



TUBE—PITOT-STATIC AIRSPEED

ARMY TYPE B-6

NAMES: Pitot-static airspeed tube
Tube assembly—airspeed type B-6
Pitot-static tube

Pitot tube (B-6)
Airspeed tube

DESCRIPTION: This airspeed tube supplies impact and static pressures for operation of instruments. It is of the light weight, non-freezing type, for strut mounting on small airplanes. No provision is made for heating.

CHARACTERISTICS:

Dimensions.....	approximately 6½ by 3¾ by 1⅝ inches
Weight.....	approximately ¼ pound
Range.....	up to 140 miles per hour
Fittings.....	AN800-3 and AN805-3

ARMY

A. E. REFERENCE NUMBER: 60-8800

SPECIFICATIONS:

General.....	None
Detail.....	94-27716
Superseded.....	None

A. A. F. DRAWING NUMBER: 33B1639

TYPE DESIGNATION: B-6

MANUFACTURER: Kollsman Instrument Division of Square D Company

MANUFACTURER'S TYPE AND DRAWING NUMBER: Type 10 and drawing number 10-900

A. S. C. STOCK NUMBER: 6000446750

TECHNICAL ORDER NUMBER: 05-50-1

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by AN5815, A. E. Reference Number 60-8810.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1011

**TUBE—PITOT-STATIC AIRSPEED****AN 5815-1 F. S. S. C. NUMBER 88-T-2900**

NAMES: Pitot-static airspeed tube
 Tube, pitot-static unheated, biplane
 Pitot tube

Pitot-static tube
 Airspeed tube
 Tube, pitot-static, unheated type

DESCRIPTION: This airspeed tube supplies impact and static pressures for the operation of instruments. It is of light construction, and has a rainproof head for vertical mounting. No provision is made for heating the tube. Flare type aluminum alloy fittings are provided for $\frac{1}{4}$ inch connecting tubing.

CHARACTERISTICS:

Dimensions.....	approximately $4\frac{3}{4}$ by $4\frac{1}{2}$ by $4\frac{1}{2}$ inches
Weight.....	approximately $\frac{1}{4}$ pound
Range.....	up to 250 miles per hour
Couplings.....	AN786-1

ARMY

A. E. REFERENCE NUMBER: 60-8810

SPECIFICATIONS:

Detail.....AN-GG-T-791
 Superseded.....94-27716

AN DRAWING NUMBER: AN5815

AN PART NUMBER: AN5815-1

MANUFACTURER: Kollsman Instrument Division of Square D Company

MANUFACTURER'S TYPE AND DRAWING NUMBER: Type 14B and drawing number 14B-900

TECHNICAL ORDER NUMBER: 05-50-1

PRODUCTION STATUS: Under procurement. Supersedes Army type B-6 pitot-static tube.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: None

SPECIFICATIONS:

Detail.....AN-GG-T-791

BUREAU OF AERONAUTICS: SQ-107

AN DRAWING NUMBER: AN5815

AN PART NUMBER: AN5215-1

F. S. S. C. STOCK NUMBER: 88-T-2900

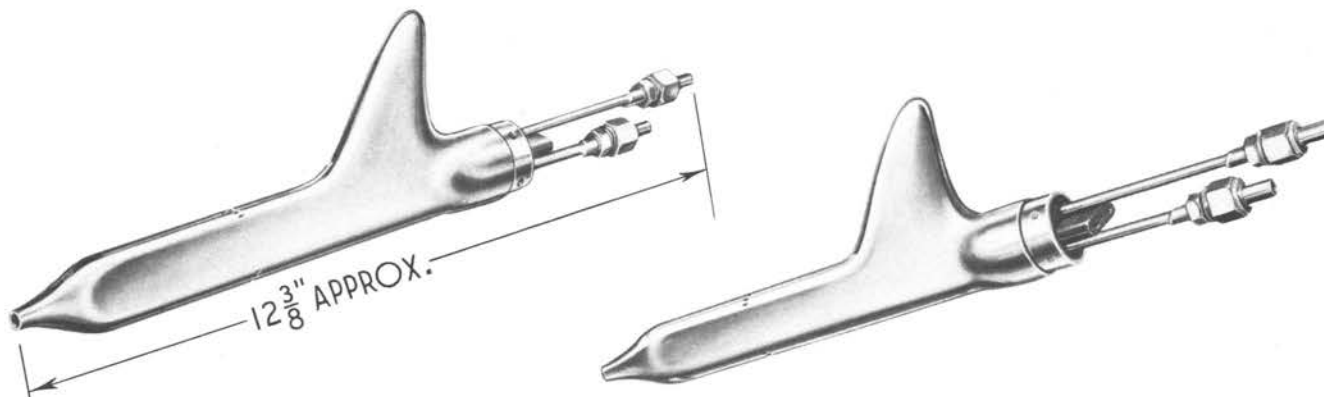
PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. Number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/438



AIRSPEED TUBES INSTRUMENTS — FLIGHT



TUBE — PITOT-STATIC AIRSPEED

AN 5816-1 FORMER ARMY TYPE C-7 F. S. S. C. NUMBER 88-T-3300

NAMES: Pitot-static airspeed tube
Airspeed tube
Pitot tube

Tube, electrically heated pitot-static
Tube, pitot-static (head pressure) heated type
Pitot-static tube

DESCRIPTION: This pitot-static airspeed tube supplies impact and static pressures for the operation of instruments. It is made of copper shark-fin, plain tube or extended nose construction, with a dull nickel finish, and contains two integral heaters. It is mounted horizontally at the forward end of a round tube on the leading edge of the wing. The shark fin section encloses water traps, to prevent the entry of rain or condensed moisture into the pressure lines.

CHARACTERISTICS:

Dimensions.....	approximately 12 $\frac{3}{8}$ by 3 $\frac{1}{4}$ by 1 $\frac{1}{4}$ inches
Weight.....	approximately 1 pound
Range.....	up to 250 miles per hour
Heater voltage.....	12 volts, direct current, 2-wire
Heater power.....	approximately 150 watts
Couplings.....	AN786-1

ARMY

A. E. REFERENCE NUMBER: 60-9000

SPECIFICATIONS:

Detail.....	AN-T-1
Superseded.....	94-27884-A

AN DRAWING NUMBER: AN5816

AN PART NUMBER: AN5816-1

TYPE DESIGNATION: Former type C-7

A. S. C. STOCK NUMBER: 6000449750 (procurement stock number)

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army Type C-7 pitot-static tube.

SHIPPING DATA: Shipped as a complete unit, including electrical plug for heaters.

NAVY

SPECIFICATIONS:

Detail.....	AN-T-1
Superseded.....	SE-6A

AN DRAWING NUMBER: AN5816

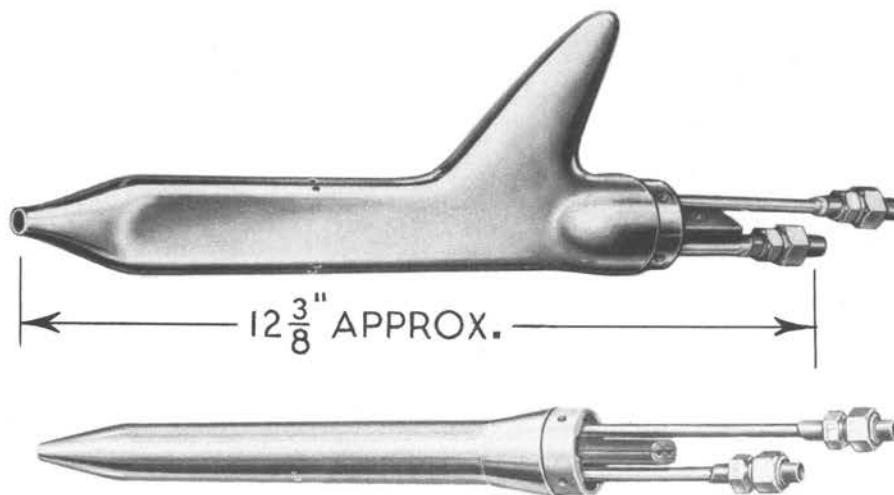
AN PART NUMBER: 5816-1

F. S. S. C. NUMBER: 88-T-3300

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. Number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Kollsman Instrument Division	369D-01	369D-01	A-N-B	6000449750	05-50-1	106A/636	
	171	171	A	6000444290	05-50-1		Army type C-1; obsolete.
	171B	171B	A	6000448000	05-50-1		Army type C-1R; obsolete.
Pioneer Instrument Div.	357-G-940	357-G-940	A	6000445250	05-50-1		
Aero Instrument Co.	PST-300-4		N				

**TUBE—PITOT-STATIC AIRSPEED****AN5816-2 F. S. S. C. NUMBER 88-T-3305**

NAMES: Pitot-static airspeed tube Tube—pitot-static (heads pressure)
 Tube—airspeed (aircraft—24 volt system) Pitot-static tube
 Tube—electrically heated pitot-static Airspeed tube

DESCRIPTION: This airspeed tube supplies impact and static pressures for the operation of flight instruments. It is of shark-fin construction, with a dull finish, and contains two integral heaters. The tube is mounted horizontally at the forward end of a round tube on the leading edge of the wing. The shark-fin section encloses water traps, to prevent entry of moisture into the air lines.

CHARACTERISTICS:

Dimensions.....approximately 12 $\frac{3}{8}$ by 3 $\frac{1}{4}$ by 1 $\frac{1}{4}$ inches
 Weight.....approximately 1 pound
 Range.....up to 250 miles per hour
 Heater voltage.....24 volt, direct current, 2 wire
 Heater power.....approximately 135 watts
 Couplings.....AN786-1

ARMY

A. E. REFERENCE NUMBER: 60-9200

SPECIFICATIONS:

Detail.....AN-T-1
 Superseded.....94-27876-A

AN DRAWING NUMBER: AN5816

AN PART NUMBER: AN5816-2

A. S. C. STOCK NUMBER: 6000451150 (procurement stock number). Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army type D-1 pitot-static tube.

SHIPPING DATA: Shipped as a complete unit.

NAVY**SPECIFICATIONS:**

Detail.....AN-T-1
 Superseded.....SE-6A

AN DRAWING NUMBER: AN5816

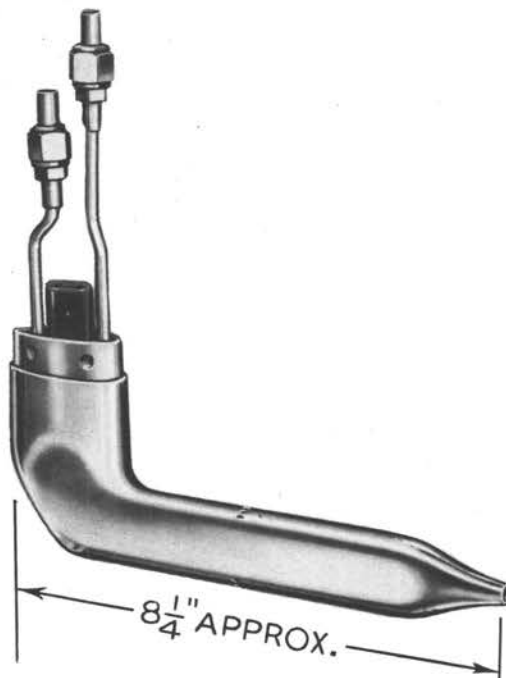
AN PART NUMBER: AN5816-2

F. S. S. C. STOCK NUMBER: 88-T-3305

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Westinghouse Electric and Mfg. Co.	1214448	4-A-8292	A-B	6000451050	05-50-1	106A/334	
Kollsman Instrument Div.	369D-02	369D-02	A-N-B	6000451000	05-50-1	106A/334	150 watt heaters. Remove fittings and substitute AN786-1 couplings
Manning Bowman & Co.	126-108	126-108	A-B	6000450875	05-50-1	106A/334	
Aero Instrument Co.	PST-300		N				

**TUBE—PITOT-STATIC AIRSPEED****ARMY TYPE D-2 F. S. S. C. NUMBER 88-T-3310**

NAMES: Pitot-static airspeed tube

Airspeed tube

Tube, airspeed, type D-2 (aircraft—24 volt system)

Pitot-static tube

Tube—pitot-static (heads pressure)

Tube—electrically heated pitot-static

DESCRIPTION: This Army type D-2 airspeed tube supplies impact and static pressures for instrument operation. It is of plain tube construction, has a dull nickel finish, and contains two integral heaters. The heating elements are hermetically sealed within a heat conductive copper shell. The tube is designed for installation on a tapered streamline mast extending below and forward of the airplane nose.

CHARACTERISTICS:

Dimensions.....approximately 8 $\frac{1}{4}$ by 6 $\frac{9}{16}$ by $\frac{7}{8}$ inches
 Weight.....approximately 1 pound
 Range.....up to 250 miles per hour
 Heater voltage.....24 volt, direct current, 2 wire
 Heater power.....approximately 100 watts
 Couplings.....AN786-1

ARMY

A. E. REFERENCE NUMBER: 60-9400

SPECIFICATIONS:

Detail.....94-27874-B

Superseded.....94-27874-A

TYPE DESIGNATION: D-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

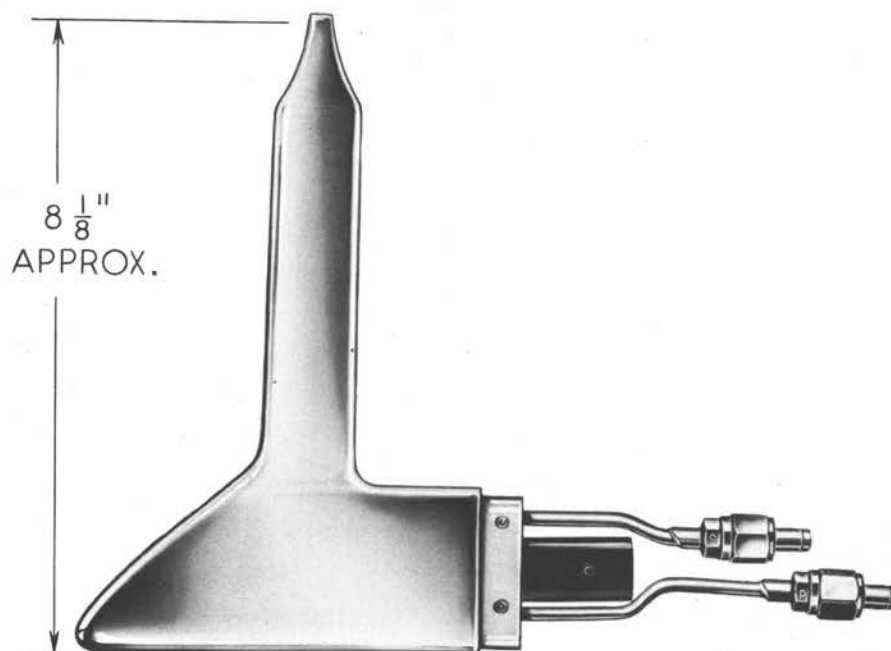
Detail.....Uses Army Spec. 94-27874

F. S. S. C. STOCK NUMBER: 88-T-3300

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Kollsman Instrument Division	373D-02	A-N-B	6000451500	05-50-1	106A/916	The heaters of this tube provide 110 watts.
Dominion Electric & Manufacturing Co.	PT-100	A-B		05-50-1	106A/916	

**TUBE—PITOT-STATIC AIRSPEED****ARMY TYPE D-3**

NAMES: Pitot-static airspeed tube
 Tube—airspeed; type D-3 (aircraft—24 volt system)
 Tube—electrically heated pitot-static

Pitot tube
 Pitot-static tube
 Airspeed tube (pitot-static)

DESCRIPTION: This Army type D-3 airspeed tube supplies impact and static pressures for the operation of instruments. It is of copper fin construction with dull nickel finish, and contains two integral heaters. It is mounted on the top of a vertical streamline strut. The fin section encloses the water traps, to prevent entry of moisture into the pressure lines.

CHARACTERISTICS:

Dimensions.....	approximately 8 1/8 by 8 3/4 by 7/8 inches
Weight.....	approximately 1 1/4 pounds
Range.....	up to 250 miles per hour
Heater voltage.....	24 volt, direct current, 2-wire
Heater power.....	approximately 125 watts
Couplings.....	AN786-1

ARMY

A. E. REFERENCE NUMBER: 60-9600

SPECIFICATIONS:

Detail.....	94-27909-B
Superseded.....	94-27909-A

TYPE DESIGNATION: D-3

MANUFACTURER: Kollsman Instrument Division of Square D Company

MANUFACTURER'S PART AND DRAWING NUMBER: 595B-02

TECHNICAL ORDER NUMBER: 05-50-1

PRODUCTION STATUS: Not under procurement for initial installation.

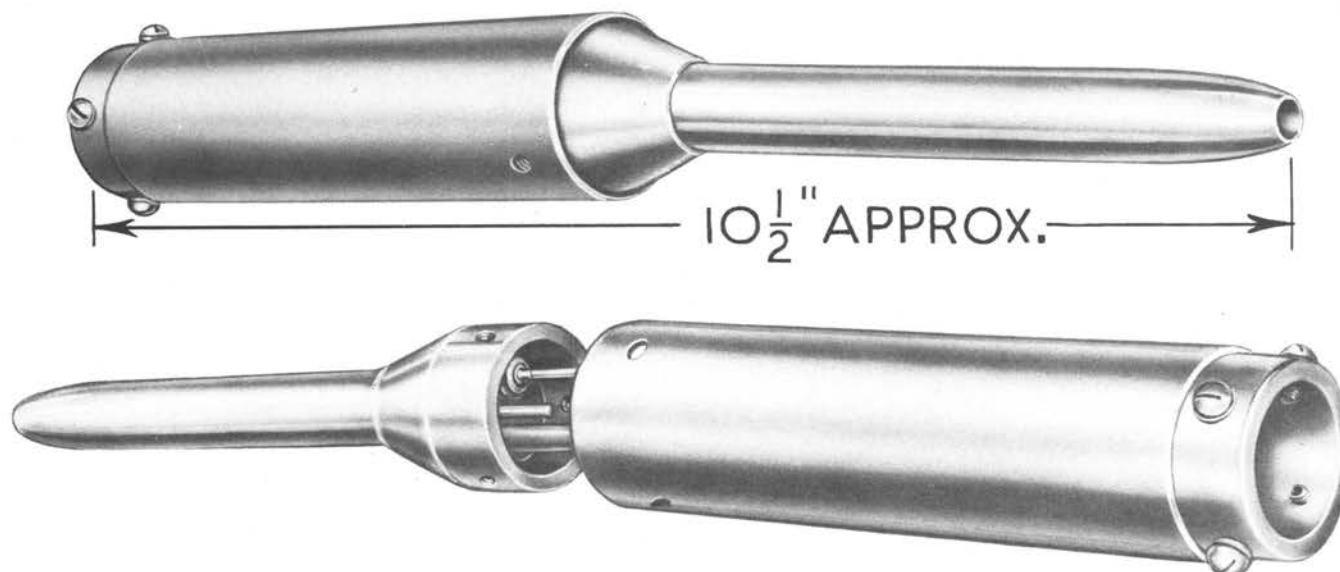
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1330



TUBE—PITOT AIRSPEED

ARMY TYPE G-1

NAMES: Pitot airspeed tube
 Tube assembly—airspeed
 Tube; airspeed, type G-1 (aircraft, pitot—24 volt system)

Chromalox type G-1 airspeed tube
 Airspeed tube

DESCRIPTION: This airspeed tube supplies impact pressure for the operation of instruments. It has a copper nose and a brass mounting section, including a steel sleeve. The nose of the tube contains a single heating element.

CHARACTERISTICS:

Dimensions.....	10½ by 1¼ by 1¼ inches (including mounting sleeve)
Weight.....	approximately 7/8 pound
Range.....	up to 600 miles per hour
Heater voltage.....	24 volt, direct current, 2 wire
Heater power.....	80 watts
Couplings.....	AN786-1

RELATIONSHIP OF PARTS: Used with:

One or two flush static tubes, A. E. Reference Number 60-9700.

ARMY

A. E. REFERENCE NUMBER: 60-9640

SPECIFICATIONS:

Detail.....27378

TYPE DESIGNATION G-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

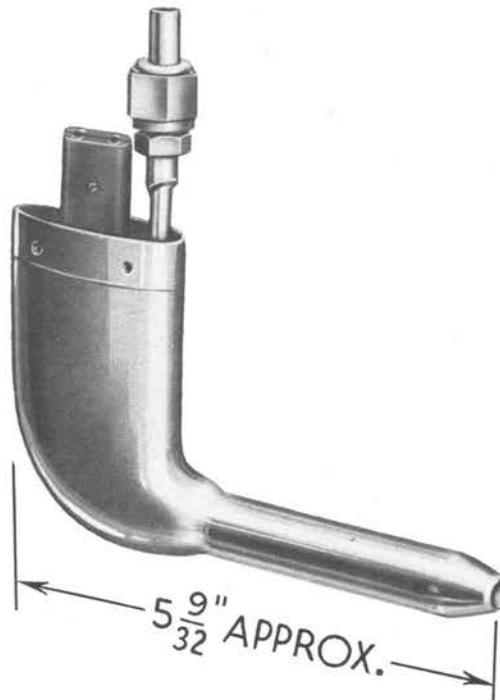
SHIPPING DATA: Shipped as a complete unit, including electrical plug for heater.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Identification	Manufacturer's Drawing Number	Used By	Army Technical Order Number
Edwin L. Wiegand Co.	BP-10443-A	1-10443	A	05-50-1
Kollsman Instruments Division	781-02	781-02	A	
Manning Bowman & Co.	126-104	126-104	A	



TUBE—PITOT AIRSPEED

ARMY TYPE G-2

NAMES: Pitot airspeed tube
Airspeed tube

Tube—airspeed; type G-2 (aircraft, pitot—24 volt system)
Chromalox type G-2 airspeed tube

DESCRIPTION: The Army type G-2 airspeed tube supplies impact pressure for the operation of instruments. It is a copper nose tube with a brass mounting section, and is installed on the left side of the fuselage of multi-engine airplanes. One heating element is provided, in the nose of the tube.

CHARACTERISTICS:

Dimensions	approximately $5\frac{9}{32}$ by $4\frac{3}{8}$ by $\frac{3}{4}$ inches
Weight	approximately $\frac{3}{4}$ pound
Range	up to 600 miles per hour
Heater voltage	24 volt, direct current, 2 wire
Heater power	approximately 80 watts
Couplings	AN786-1

RELATIONSHIP OF PARTS:

This pitot airspeed tube is used with one or two flush static airspeed tubes, A. E. Reference Number 60-9700.

ARMY

A. E. REFERENCE NUMBER: 60-9650

SPECIFICATIONS:

Detail	94-27389
Superseded	27389

TYPE DESIGNATION: G-2

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

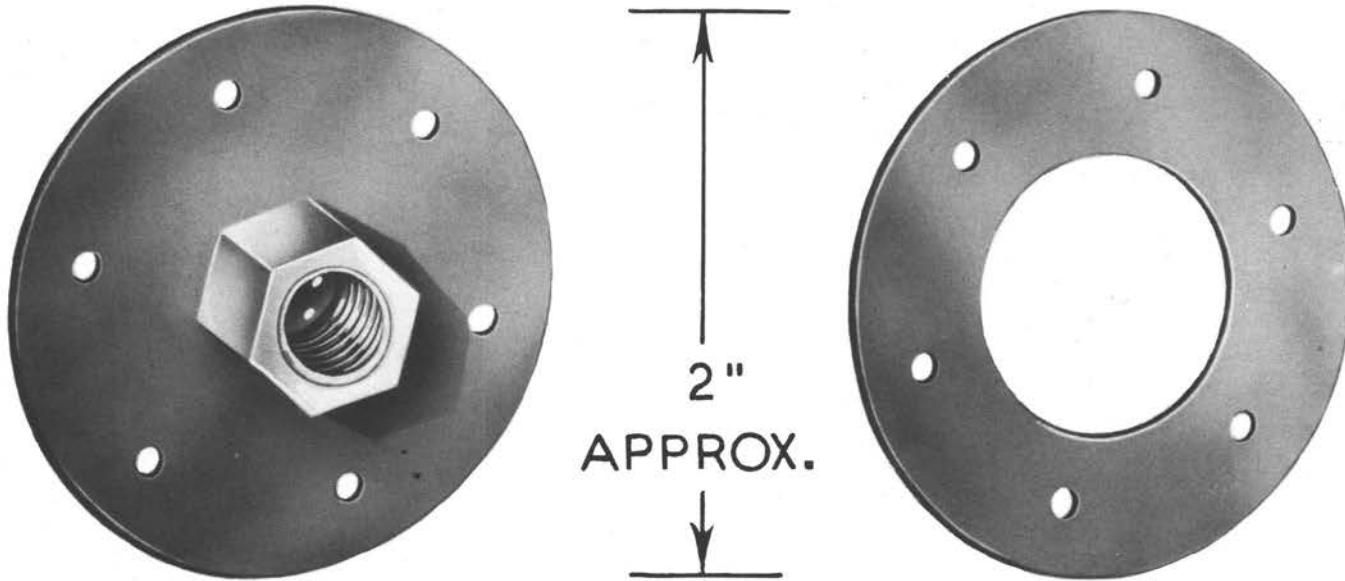
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Army Technical Order Number	British Reference Number
Edwin L. Wiegand Co.	BC-20585-A	1-20585	A-B	05-50-1	106A/1329
Kollsman Instrument Division	782-02	782-02	A-B		106A/1329
Manning Bowman & Co.	126-105	126-105	A-B		106A/1329



TUBE—FLUSH STATIC PRESSURE

ARMY DRAWING NUMBER 42A13995

NAMES: Flush static pressure tube
Flush-mounted static tube
Static tube

DESCRIPTION: This static pressure tube is used in conjunction with pitot tubes to supply static pressure for the operation of instruments. No heating is necessary. It is an aluminum alloy casting with a center tubing threaded section. A reinforcing ring is installed outside the airplane skin, along the side of the fuselage. The tube is placed inside the airplane skin, and rivets are passed through the tube, skin and reinforcing ring.

These tubes are usually used in pairs, with one installed on each side of the fuselage.

CHARACTERISTICS:

Dimensions..... approximately 2 inches in diameter
Weight..... approximately ½ ounce
Tubing connection..... ⅛ inch internal pipe thread

RELATIONSHIP OF PARTS: Used with:

Reinforcing ring Army Drawing Number 42A11521 furnished with it. This flush static tube is used with Army type G-1 or G-2 pitot airspeed tubes, A. E. Reference Numbers 60-9640 and 90-9650, to furnish differential pressures for operation of instruments.

ARMY

A. E. REFERENCE NUMBER: 60-9700

A. A. F. DRAWING NUMBER: 42A13995

MANUFACTURERS: Gerity-Andrain Manufacturing Corporation, A. A. F. Drawing Number 42A13995.
National Die Casting Company, A. A. F. Drawing Number 42A13995.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped complete with reinforcing ring.

NAVY

There is no Navy equivalent for this item.



ALTIMETERS

The altimeter is an instrument which indicates the altitude at which an airplane is flying. It consists of an airtight, cylindrical case which houses the activating mechanism, a graduated dial, a pointer or pointers and, usually, a barometric scale.

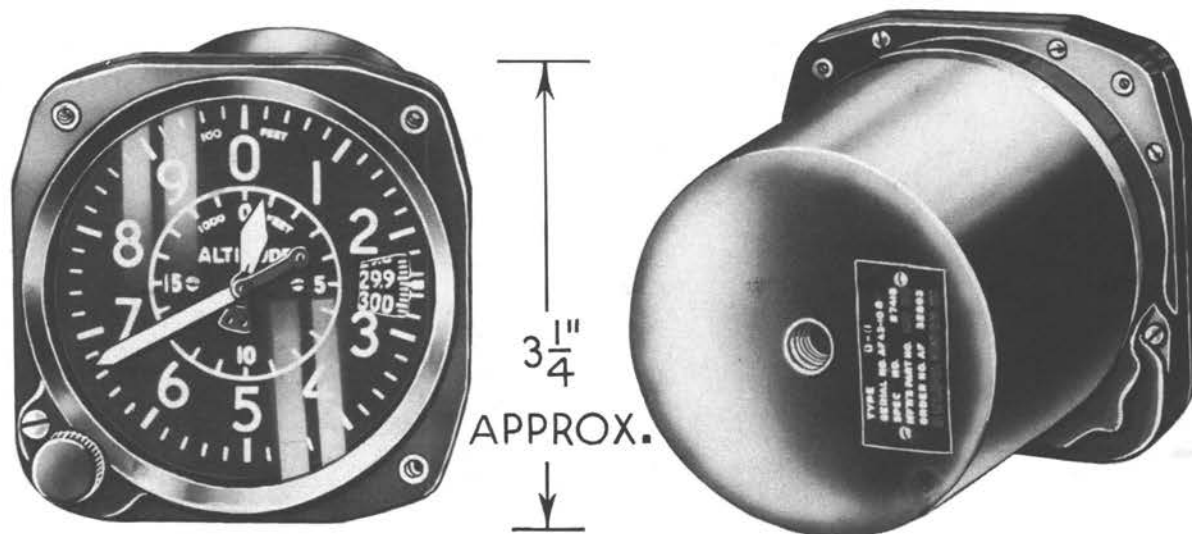
It is an absolute pressure measuring instrument which operates upon the same principle as that of the aneroid barometer. The heart of the mechanism is a sensitive metal diaphragm, from which the air has, to a large extent, been evacuated. As the altitude changes, the atmospheric pressure changes proportionately. Atmospheric pressure from the static side of the airspeed pitot-static tube surrounds the diaphragm, and changes in this pressure cause the diaphragm to contract or expand. This contraction or expansion is compensated for temperature changes, and is translated into feet of altitude upon the dial of the altimeter.

The diaphragm is so constructed that the altitude reading at sea level and standard atmospheric pressure is zero. When the field elevation is not sea level and the barometric pressure for the field is not standard, these factors may be compensated for through a zero setting knob, which moves the dial or barometric scale to correspond to existing conditions. This correction is necessary, in order to obtain a true altitude indication for the airplane, and to permit the pointers to return to zero upon landing.

The two general classifications of altimeters are the standard and the sensitive. The standard altimeter has a single pointer which makes one or two revolutions for the full range of the instrument. The sensitive altimeter has two or three pointers. When there are two, one indicates hundreds of feet and the other thousands of feet per revolution. When a third is employed, it indicates tens of thousands of feet.



ALTIMETERS INSTRUMENTS—FLIGHT



ALTIMETER—PRESSURE

ARMY TYPE B-11

NAMES: Pressure altimeter
Altimeter assembly

Sensitive altimeter

DESCRIPTION: The Army type B-11 sensitive altimeter has two pointers for indicating altitude. It also has a barometric scale which indicates atmospheric pressure in inches of mercury. This scale is visible through a window in the face of the dial.

CHARACTERISTICS:

Range.....	0 to 20,000 feet
Dial.....	2 3/4 inches diameter
Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 1/4 inches
Weight.....	approximately 1 1/2 pounds
Markings: Principal.....	radioactive fluorescent material
Minor.....	fluorescent material
Connection.....	1/8 internal pipe thread

MANUFACTURER: Bulova Watch Co.

ARMY

A. E. REFERENCE NUMBER: 60-250

SPECIFICATIONS:

General.....	94-27409
Detail.....	94-27418
Superseded.....	27418

MANUFACTURER'S PART AND DRAWING NUMBER: Bulova 176-B-11

TYPE DESIGNATION: B-11

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

REFERENCE NUMBER: 106A/1348

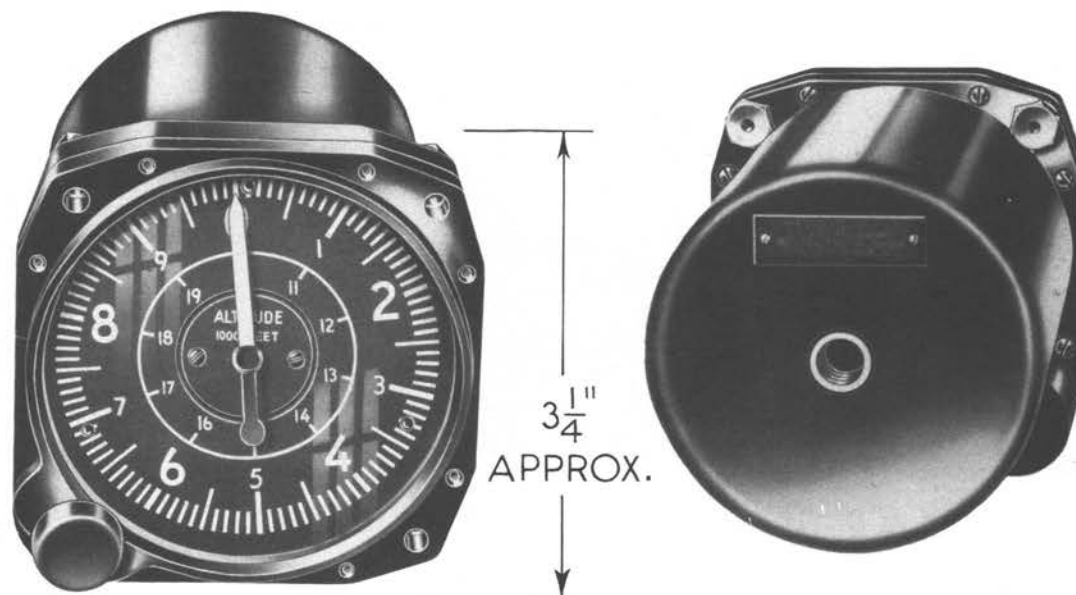
TYPE INTERCHANGEABILITY

A.A.F. Type

B-12	Range, 0-20,000
C-11	Range, 0-35,000
AN5760-1	Range, 0-35,000
AN5760-2	Range, 0-50,000

A.A.F. Type

AN5760-3	Range, 0-35,000; fluorescent markings only
AN5760-4	Range, 0-50,000; fluorescent markings only
AN5761-1	Range, 0-35,000



ALTIMETER—PRESSURE

ARMY TYPE B-12

NAMES: Pressure altimeter
Altimeter assembly

DESCRIPTION: The B-12 non-sensitive altimeter has one pointer. This pointer reads in thousands of feet, and makes two complete revolutions for its range of 20,000 feet. It does not have a barometric scale, but a knob is provided with which to revolve the dial, so that the pointer may be set to zero at any existing atmospheric pressure between 28 and 30 inches of mercury.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 1/4 inches
Weight.....	approximately 1 pound
Range.....	0 to 20,000 feet
Dial size.....	2 3/4 inches diameter
Connections.....	1/8 inch internal pipe thread
Markings: Principal.....	fluorescent—radioactive material
Minor.....	white paint

MANUFACTURER: United States Gauge Company

ARMY

A. E. REFERENCE NUMBER: 60-300

SPECIFICATIONS:

Detail.....	94-27382
Superseded.....	27382

MANUFACTURER'S DRAWING NUMBER: AW-2 3/4-32J

TYPE DESIGNATION: B-12

A. S. C. STOCK NUMBER: 6000011165

TECHNICAL ORDER NUMBER: 05-30-6

PRODUCTION STATUS: Under procurement.

Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

TYPE INTERCHANGEABILITY

Army Type

AN5761-1	Range, 0-35,000
C-12	Range, 0-50,000
C-13	Range, 0-35,000



ALTIMETERS INSTRUMENTS—FLIGHT



ALTIMETER—PRESSURE

ARMY TYPE C-11

NAMES: Pressure altimeter
Altimeter assembly

Sensitive altimeter

DESCRIPTION: The Army type C-11 sensitive altimeter has three pointers, so that altitude may be accurately indicated. It has a barometric scale which indicates atmospheric pressure in inches of mercury, and altitude setting (reference) markers, which are set by a knob at the lower left-hand corner of the case.

CHARACTERISTICS:

Range.....	0 to 35,000 feet
Dial size.....	2¾ inches diameter
Dimensions.....	approximately 3¼ by 3¼ by 4¼ inches
Weight.....	approximately 1½ pounds
Lighting.....	individual; 1 wire, 3 volt lamp
Markings.....	radioactive material
Connection.....	⅛ inch internal pipe thread, with type 811 fittings installed

ARMY

A. E. REFERENCE NUMBER: 60-400

SPECIFICATIONS:

General.....	94-27714
Detail.....	94-27857
Superseded.....	27857

TYPE DESIGNATION: C-11

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Kollsman Instrument Division	371S-03	A-B	6000015000	05-30-1	106A/435
	371S-01	C			



ALTIMETERS INSTRUMENTS—FLIGHT



ALTIMETER—PRESSURE

AN5760-2 FORMER ARMY TYPE C-12 F.S.S.C. NUMBER 88-A-350

NAMES: Pressure altimeter
Altimeter assembly

Sensitive altimeter

DESCRIPTION: The AN5760-2 sensitive altimeter has three pointers so that altitude in feet may be accurately indicated. It also has a barometric scale, which indicates atmospheric pressure in inches of mercury, and altitude setting (reference) markers, which are operated by a knob located at the lower left-hand corner of the case.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 1/4 inches
Weight.....	approximately 1 1/2 pounds
Range.....	0 to 50,000 feet
Dial.....	2 3/4 inches diameter
Markings: Principal.....	fluorescent—radioactive material
Minor.....	fluorescent material
Connections.....	1/8 inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: *60-600

SPECIFICATIONS:

Detail.....AN-GG-A-461
Superseded.....94-27957-A

AN DRAWING NUMBER: AN5760

AN PART NUMBER: AN5760-2

TYPE DESIGNATION: Former type C-12.

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....AN-GG-A-461
Superseded.....SQ-81A

AN OR N. A. F. DRAWING NUMBER:
AN5760

AN PART NUMBER: AN5760-2

F. S. S. C. STOCK NUMBER: 88-A-350

PROCUREMENT STATUS: Standard—
G. F. E.—Order through A. S. O. by
F. S. S. C. number.

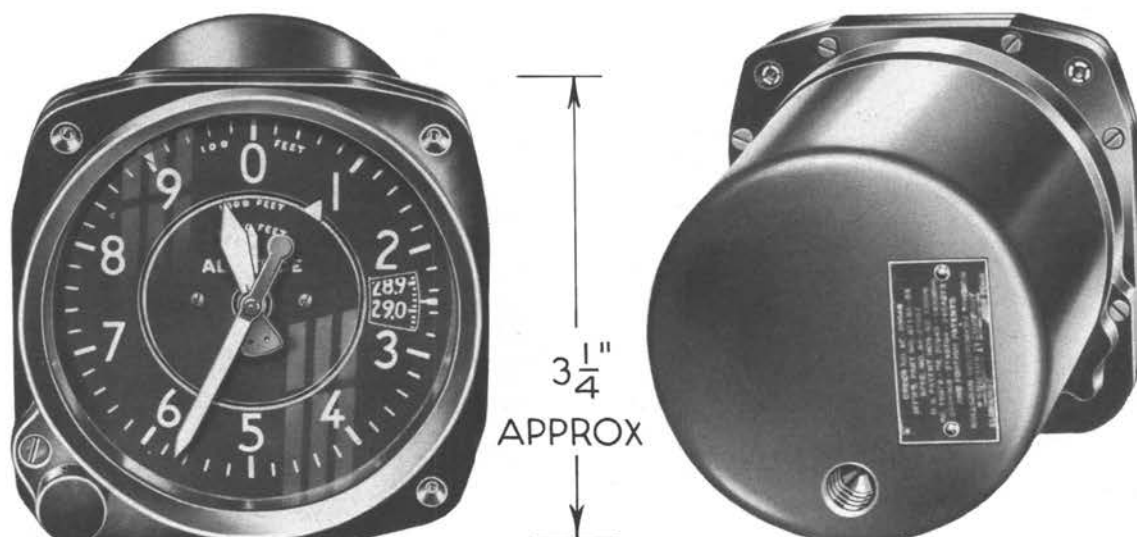
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Kollsman Instrument Division	671K-03	A-B	6000015265	05-30-5	106A/837
	671BK-03	A-B	6000015262	05-30-5	106A/837
	671CK-010	N			
	744KN-02	N			
	744BKN-02	N			
	671K-01	A-C	6000015260		
	671BK-01	C			
C. G. Conn, Ltd.	8000	A-B			106A/837

TYPE INTERCHANGEABILITY

A. A. F. Type
AN5760-4

Range, 0-50,000. Fluorescent marking only.



ALTIMETER—PRESSURE

AN5760-1 FORMER ARMY TYPE C-13

NAMES: Pressure altimeter
Altimeter assembly

Sensitive altimeter

DESCRIPTION: The AN5760-1 sensitive altimeter has three pointers, so that altitude in feet may be accurately indicated. It also has a barometric scale which indicates atmospheric pressure in inches of mercury, and altitude setting (reference) markers which are operated by a knob located at the lower left-hand corner of the case.

CHARACTERISTICS:

Range	0 to 35,000 feet
Dial size	2 3/4 inches diameter
Dimensions	approximately 3 1/4 by 3 1/4 by 4 1/4 inches
Markings: Principal	radioactive—fluorescent material
Minor	fluorescent material
Weight	approximately 1 1/2 pounds
Connection	1/8 internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-800

SPECIFICATIONS:

Detail	AN-GG-A-461
Superseded	94-27958

AN DRAWING NUMBER: AN5760

AN PART NUMBER: AN5760-1

TYPE DESIGNATION: Former type C-13

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

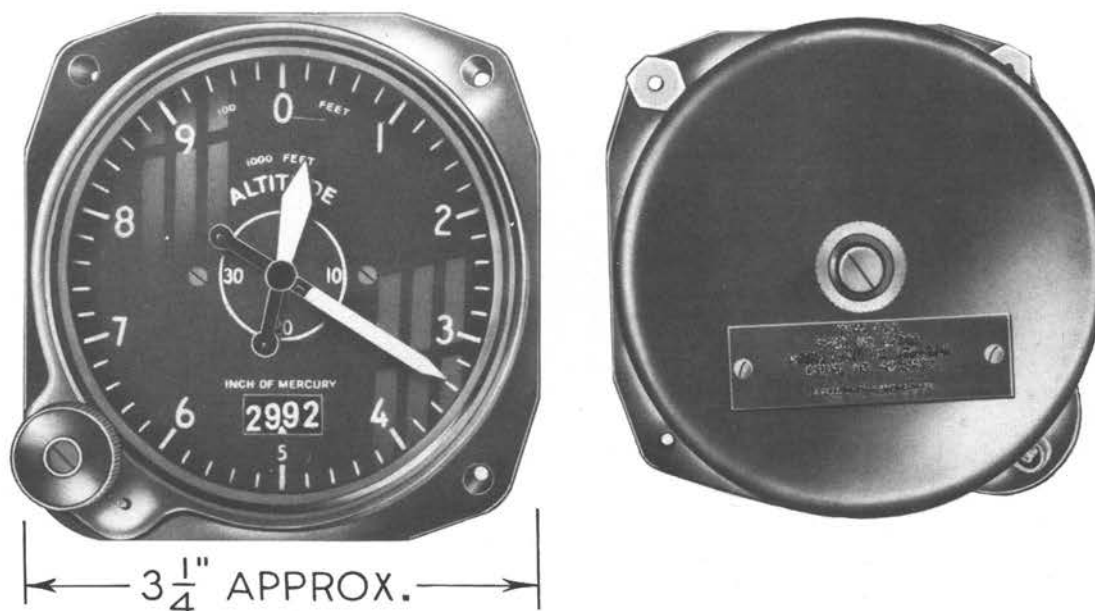
There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Kollsman Instrument Division	371K-05	A-B	6000015290	05-30-5 05-30-1	106A/567
	371K-01	C	6000008977		

TYPE INTERCHANGEABILITY

Type	
AN5761-1	Range, 0-35,000
AN5760-2	Range, 0-50,000
C-11	Range, 0-35,000



ALTIMETER—PRESSURE

AN5761-1 FORMER ARMY TYPE C-14A F.S.S.C. NUMBER 88-A-340

NAMES: Pressure altimeter
Barometric pressure index altimeter

Altimeter assembly
Sensitive altimeter

DESCRIPTION: The AN5761-1 pressure altimeter is a sensitive type. It has three pointers, a barometric scale to indicate atmospheric pressure in inches of mercury, and a zero setting knob located at the lower left-hand corner of the case. This altimeter contains a mechanical stop, to prevent injury to the diaphragm during pressure cabin air tests.

CHARACTERISTICS:

Range.....	0 to 35,000 feet
Dial size.....	2¾ inches diameter
Dimensions.....	approximately 3¼ x 3¼ by 4¼ inches
Markings:	
Principal.....	fluorescent—radioactive material
Minor.....	fluorescent material
Weight.....	approximately 1½ pounds
Connection.....	⅛ inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-1000

SPECIFICATIONS:

Detail.....	AN-A-2
Superseded.....	94-27342-A

AN DRAWING NUMBER: AN5761

AN PART NUMBER: AN5761-1

TYPE DESIGNATION: Former type C-14A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement. Supersedes Army type C-14A altimeter.

SHIPPING DATA: Shipped as a complete unit.

(Continued on page 154)



ALTIMETER—PRESSURE

(Continued from page 153)

NAVY

SPECIFICATIONS:

Detail. AN-A-2

Superseded: SQ-81-A

AN DRAWING NUMBER: AN5761 (supersedes Bureau of Aeronautics 842-SK)

AN PART NUMBER: AN5761-1

F. S. S. C. NUMBER: 88-A-340

PROCUREMENT STATUS: Standard—G. F. E.—Order through A. S. O. by F. S. S. C. number.

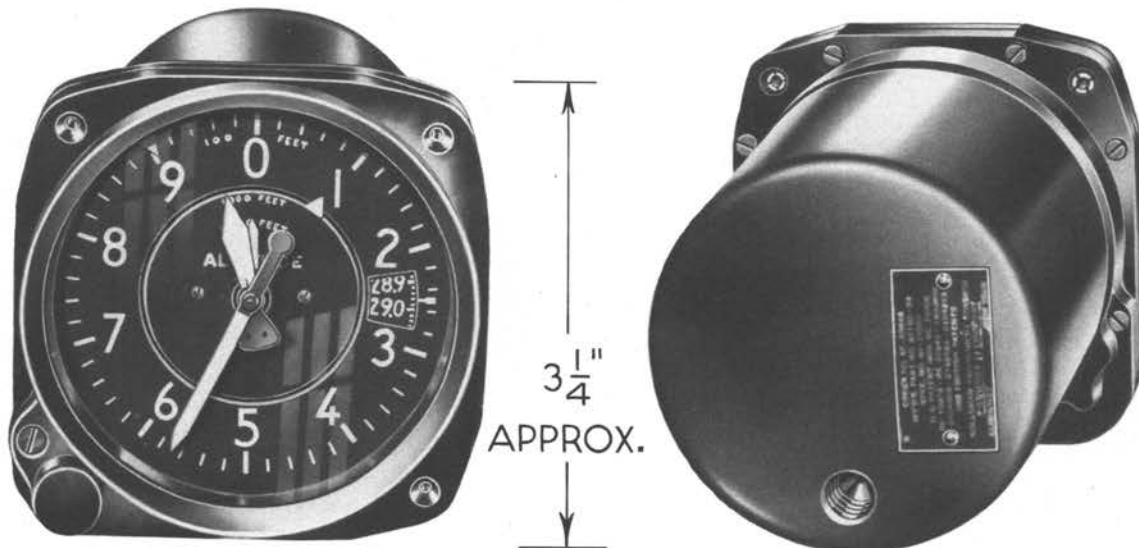
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	1554-2J-A	A-B	6000015310	05-30-4	106A/1105
	1537-2D-A1	N			
	1537-2F-B1	N			
	1556-2K-A	N			
	1537-2B-A	N			
	1537-2D-A	N			
	1537-2F-A	N			
	1537-2F-B	N			
	1537-2K-A	N			
	1555-2L-A	C			
	1555-2M-A	C			
	1582-2M-A	C			
	1555-2J-A	A	6000015315	05-30-4	
	1555-2J-B	A			
Kollsman Instrument Division	544KN-02	N			
	544KN-04	N			
	544KN-05	N			
	544KN-06	C			
	544KN-07	C			

TYPE INTERCHANGEABILITY

A. A. F. Type

C-12 Range, 0-50,000
C-13 Range, 0-35,000



ALTIMETER—PRESSURE

AN5760-4 FORMER ARMY TYPE C-16 F.S.S.C. NUMBER 88-A-351

NAMES: Pressure altimeter
Altimeter assembly

Sensitive altimeter

DESCRIPTION: The AN5760-4 sensitive altimeter has three pointers. It has a barometric scale which indicates atmospheric pressure in inches of mercury, and altitude setting (reference) markers which indicate altitude in feet. The pressure scale and reference markers are adjusted by a knob located at the lower left-hand corner of the case. The dial has fluorescent markings only, and it is intended for installation in night fighters.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 1/4 inches
Weight.....	approximately 1 1/2 pounds
Range.....	0 to 50,000 feet
Dial size.....	2 3/4 inches diameter
Markings.....	fluorescent material
Connections.....	1/8 inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-1050

SPECIFICATIONS:

Detail.....AN-GG-A 461
Superseded.....94-27386

AN DRAWING NUMBER: AN5760

AN PART NUMBER: AN5760-4

TYPE DESIGNATION: Former type C-16

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....AN-GG-A-461

Superseded.....SQ-81A

AN DRAWING NUMBER: AN5760 (former Bureau of Aeronautics 842-SK)

AN PART NUMBER: AN5760-4

F. S. S. C. STOCK NUMBER: 88-A-351

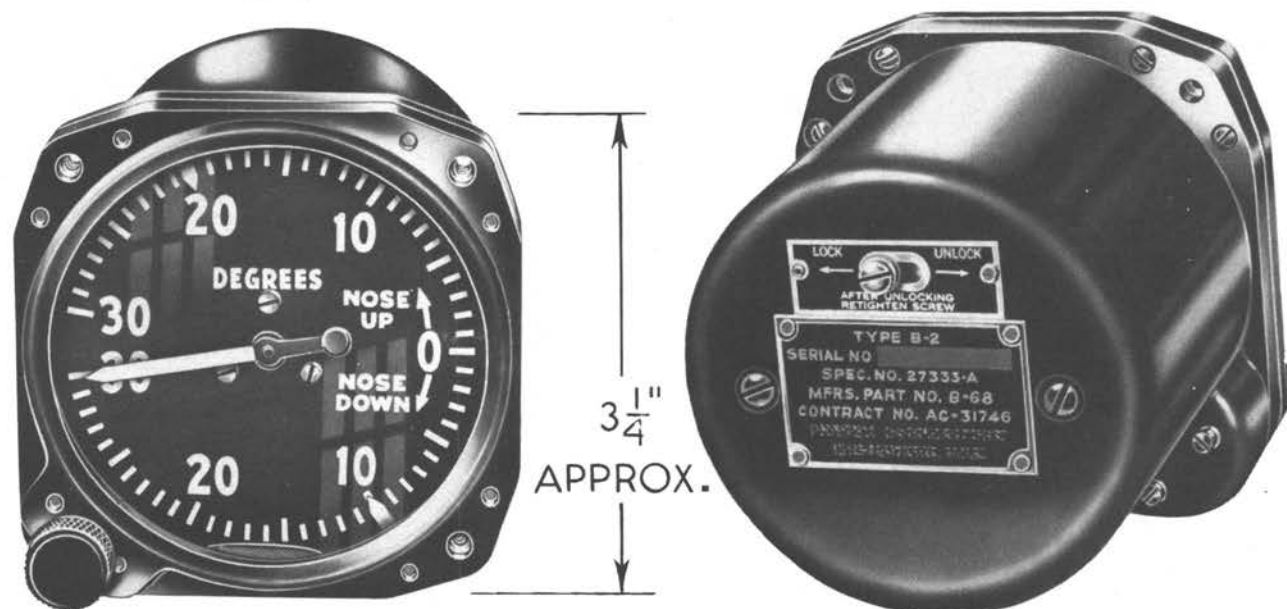
PROCUREMENT STATUS: Standard—

G. F. E.—Order through A. S. O. by

F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number
Kollsman Instrument Division	671BK-07	A-B	6000015360
	671BK-010-4*	A	
	671CK-010-4*	A	
	744BKN-04	N	

**INCLINOMETER****ARMY TYPE B-2**

DESCRIPTION: This instrument is used to indicate the angle of the airplane, so bombs may be safely released in bombing operations.

This is accomplished by a compound pendulum which is free to oscillate in a plane parallel to the longitudinal fore and aft axis of the airplane. The pendulum is geared to a pointer which revolves in a limited arc on a dial calibrated through the range from zero (level) to 30 degrees nose up or down. When the airplane noses up or down the pendulum remains vertical, thus changing its position with relation to the rest of the instrument. This change is indicated by the pointer on the dial.

CHARACTERISTICS:

Dimensions.....approximately 3 1/4 by 3 1/4 by 3 1/16 inches
 Weight.....approximately 1 pound
 Range.....+30 degrees to -30 degrees, nose up or down
 Dial size.....2 3/4 inches diameter
 Markings.....fluorescent material

ARMY

A. E. REFERENCE NUMBER: 60-3750

SPECIFICATIONS:

Detail.....94-27333
 Superseded.....27333-A

TYPE DESIGNATION: B-2

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Perfex Corporation	B-58	A	6000172275	05-20-30	106A/1432
Jaeger Watch Company	5010	A	6000172290	AN 05-20-31	106A/1432



RATE-OF-CLIMB INDICATORS

Rate-of-climb, or vertical speed indicators, show the rate of ascent or descent of the airplane, regardless of its position. These instruments are extremely sensitive, and show a rate of gain or loss of altitude which would be too small to cause a noticeable change in the altimeter reading until considerable altitude change had taken place.

Reference to this indicator helps a pilot to make banked turns without gain or loss of altitude and to maintain constant and definite rates of descent when making landings on instruments alone. In level flight, the pointer is horizontal at the zero mark. In climbing flight, a definite rate is indicated in a clockwise direction, while in descent, indication is made counterclockwise from the zero position. A knob is usually provided on the front of the instrument, to enable the pointer to be set to zero prior to take-off.

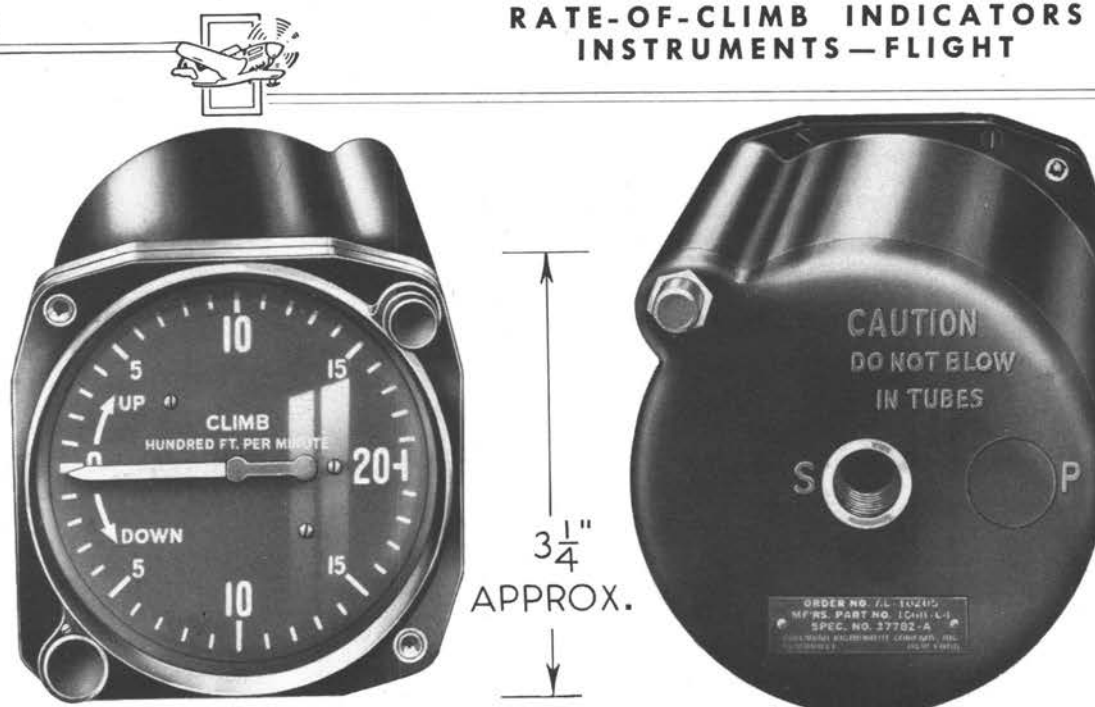
A hollow diaphragm in the instrument case moves a pointer which indicates the rate of ascent or descent in feet per minute. Atmospheric pressure from the static pressure connection of the pitot-static or flush static airspeed tube is led through two ducts, one having unrestricted passage into the diaphragm, while the other has a restricted opening, called a calibrated leak, to the interior of the case surrounding the diaphragm.

As an airplane ascends, the atmospheric pressure decreases, therefore in ascent the pressure of the air in the diaphragm is less than that of the air in the surrounding case. This is due to the restricted flow through the calibrated leak. The difference in pressure is transmitted to the scale by mechanical linkage, and shows the rate of ascent. In descending, the air pressure in the diaphragm exceeds the pressure in the case, and the pressure differential is similarly shown on the descent side of the dial.

To avoid errors in the indications, due to changes in air temperature, automatic adjustments are provided. Compensation for temperature change at different altitudes is accomplished by having the air pass through a charcoal compartment. As the temperature is lowered, the air in the case will contract. This reduces the pressure and tends to expand the diaphragm. At the same time, the compensator is being cooled, and some of the oxygen in the air clings to the surface of the charcoal particles, reducing the pressure within the diaphragm. This is known as absorption. The rate of absorption increases with each decrease in temperature.

Each duct is provided with a valve made of an inner sleeve with a low rate of expansion which contains an aluminum plunger having a high rate of expansion. Warm air expands the plunger and decreases the opening through which the air passes. Cold air contracts the plunger, increasing the size of the passage. These expansions and contractions thus bring about correct readings under varying conditions of temperature.

RATE-OF-CLIMB INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—RATE-OF-CLIMB

ARMY TYPE A-6

NAMES: Rate-of-climb indicator
Indicator—climb

Vertical speed indicator

DESCRIPTION: The Army type A-6 rate-of-climb indicator is housed in a standard 2 3/4-inch dial case, and has a zero setting knob located in the lower left corner of the instrument face. It has a standard open scale dial, with graduations from 0 to 20 hundred feet per minute in a clockwise direction for climb, and in a counterclockwise direction for descent.

CHARACTERISTICS:

Dimensions.....approximately 3 1/4 by 3 1/4 by 6 1/4 inches (maximum)
Weight.....approximately 1 1/4 pounds
Range.....0 to 2000 feet per minute, climb and descent
Static pressure connection.....1/8-inch internal pipe thread with type 811 fittings installed
Illumination.....rim light, 1 wire, 3-volt lamp
Markings: Principal.....radio-active material
Minor.....white paint

ARMY

A. E. REFERENCE NUMBER: 60-6500

SPECIFICATIONS:

Detail.....94-27782-A
Superseded.....94-27782

TYPE DESIGNATION: A-6

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type A-7.

SHIPPING DATA: Shipped as a complete unit.

Gross weight.....approximately 3 pounds
Dimensions of carton.....approximately 6 by 6 by 6 inches

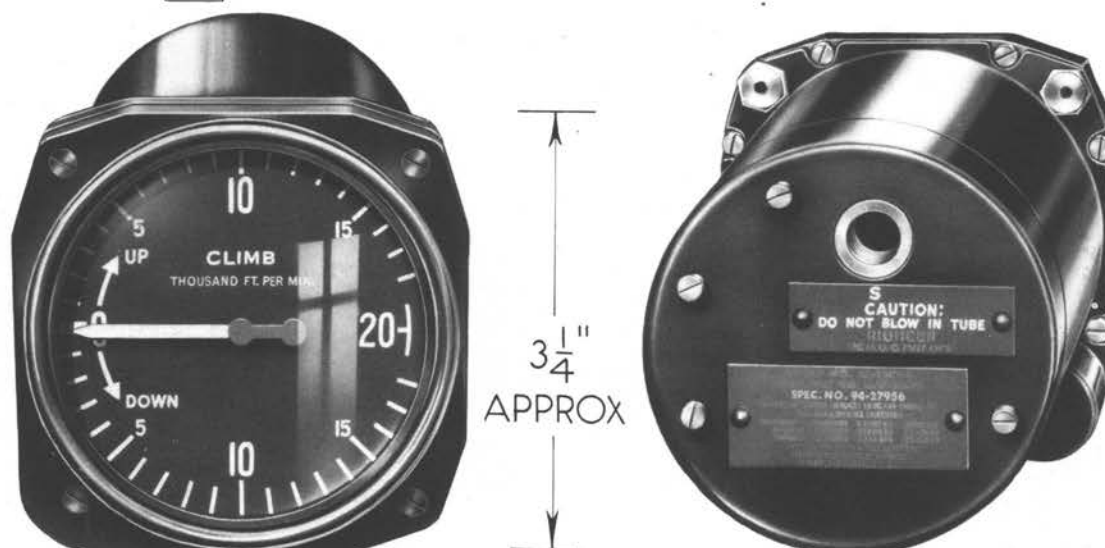
NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Case Depth (Inches)
Pioneer Instrument Division	1623-1E-A1	A-B	6000231250	05-20-17	106A/87	4 3/4
	1623-1F-B1	A-B	6000231500	05-20-17	106A/87	4 3/4
	1623-1B-A1	C				4 3/4
	1623-1D-A1	C				4 3/4
	1623-1B-B1	C				4 3/4
Kollsman Instrument Division	366B-03	A-B	6000231000	05-20-26	106A/87	6
	366B-04	A-B	6000231100	05-20-26	106A/87	6

RATE-OF-CLIMB INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—RATE-OF-CLIMB

ARMY TYPE A-7

NAMES: Rate-of-climb indicator
Indicator—climb

Vertical speed indicator

DESCRIPTION: The Army type A-7 rate-of-climb indicator is housed in a $2\frac{3}{4}$ -inch AN standard dial case, and has a zero adjusting screw in the lower left corner of the instrument face. It has a standard open scale dial, with graduations from 0 to 20 hundred feet per minute in a clockwise direction for climb, and in a counterclockwise direction for descent.

CHARACTERISTICS:

Dimensions	approximately $3\frac{1}{4}$ by $3\frac{1}{4}$ by $6\frac{1}{4}$ inches (maximum)
Weight	approximately $1\frac{1}{4}$ pounds
Range	0 to 2000 feet per minute, climb and descent
Static pressure connection	$\frac{1}{8}$ -inch internal pipe thread with type 811 fittings installed
Illumination	none. Designed for external fluorescent lighting
Markings: Principal	radium luminous material (radio-active)
Minor	phosphorescent or fluorescent luminous material

ARMY

A. E. REFERENCE NUMBER: 60-6600

SPECIFICATIONS:

Detail	94-27956
Superseded	27956

TYPE DESIGNATION: A-7

A.S.C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation. Superseded by Army type C-2.

SHIPPING DATA: Shipped as a complete unit.

Gross weight	approximately 3 pounds
Dimensions of carton	approximately 6 by 6 by 6 inches

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

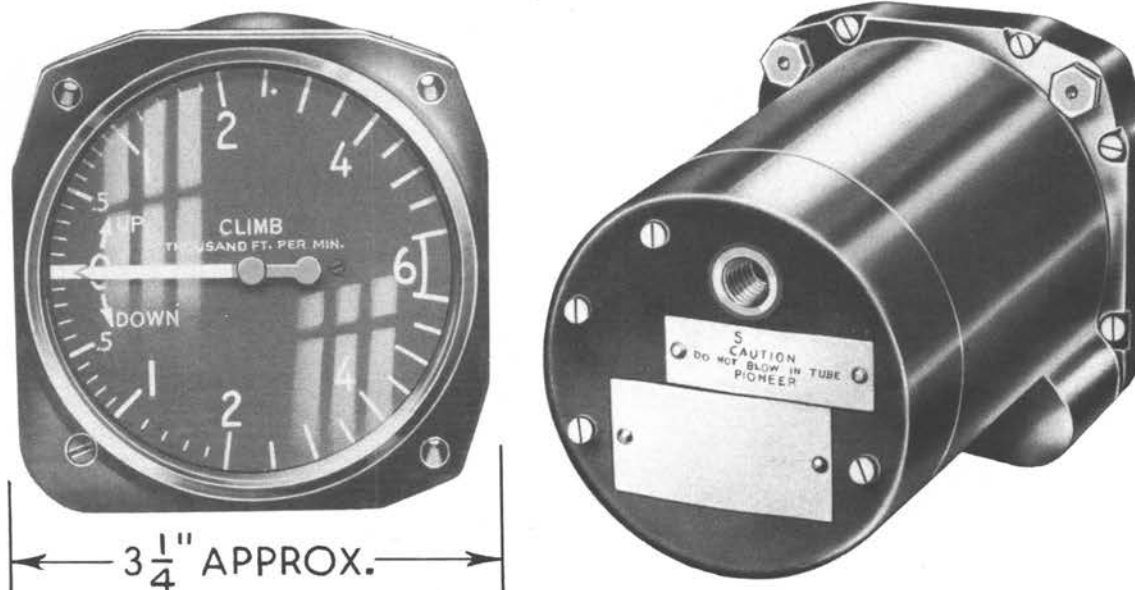
Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Pioneer Instrument Division	1637-IN-A1	A-B	6000231780	05-20-17	106A/851	Uniform scale.
	1631-1F-A1	C				Compressed scale.
	1634-1M-A1	A-C	6000228915			Compressed scale.
	1634-1S-A1	C				Compressed scale.
	1634-1T-A1	C				Compressed scale.

TYPE INTERCHANGEABILITY

A. A. F. Type	Range	Dial Graduation	Markings	Fitting
A-7	2000-0-2000	Uniform scale	Luminous—fluorescent—radio-active and fluorescent	Fitting 811 attached
AN5825-1 (C-2)	6000-0-6000	Compressed scale	Luminous—fluorescent—radio-active and fluorescent	Less fitting
AN5825-2	6000-0-6000	Compressed scale	Fluorescent	Less fitting

NOTE: The Army types C-2, AN5825-1, and AN5825-2 are interchangeable with and may be used to replace Army type A-7. The Army type A-7, however, is limited to a smaller range than the other types.

RATE-OF-CLIMB INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—RATE-OF-CLIMB

AN5825-2 F.S.S.C. NUMBER 88-I-751

NAMES: Rate-of-climb indicator
Indicator—climb

Vertical speed indicator

DESCRIPTION: The AN5825-2 rate-of-climb indicator is housed in a $2\frac{3}{4}$ inch AN standard dial case, and has a zero-adjusting screw in the lower left corner of the instrument face. It has a logarithmic (compressed) scale dial with graduations from 0 to 6 thousand feet per minute in a clockwise direction for climb, and in a counterclockwise direction for descent.

The AN5825-2 indicator is identical with the AN5825-1, except that the AN5825-2 is marked with fluorescent material only, and contains no radio-active markings, since it is used primarily on night fighter airplanes.

CHARACTERISTICS:

Dimensions.....	approximately $3\frac{1}{4}$ by $3\frac{1}{4}$ by $4\frac{1}{8}$ inches
Weight.....	approximately $1\frac{1}{2}$ pounds
Range.....	0 to 6,000 feet per minute, climb and descent
Static pressure connections.....	$\frac{1}{8}$ inch internal pipe thread
Illumination.....	none. Designed for external fluorescent lighting
Markings: Principal.....	fluorescent
Minor.....	fluorescent

ARMY

A. E. REFERENCE NUMBER: 60-7000

SPECIFICATIONS:

Detail.....	AN-GG-I-518
Superseded.....	94-27967

MANUFACTURER'S PART AND DRAWING NUMBER: Kollsman Instrument Division of Square D Company 731KN-04

AN DRAWING NUMBER: AN5825

AN PART NUMBER: AN5825-2

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Gross weight.....	approximately $3\frac{1}{2}$ pounds
Dimensions of carton.....	approximately $7\frac{1}{2}$ by $7\frac{1}{2}$ by $9\frac{1}{2}$ inches

NAVY

SPECIFICATIONS:

Detail.....	AN-GG-I-518
Superseded.....	SQ-91A

AN DRAWING NUMBER: AN5825

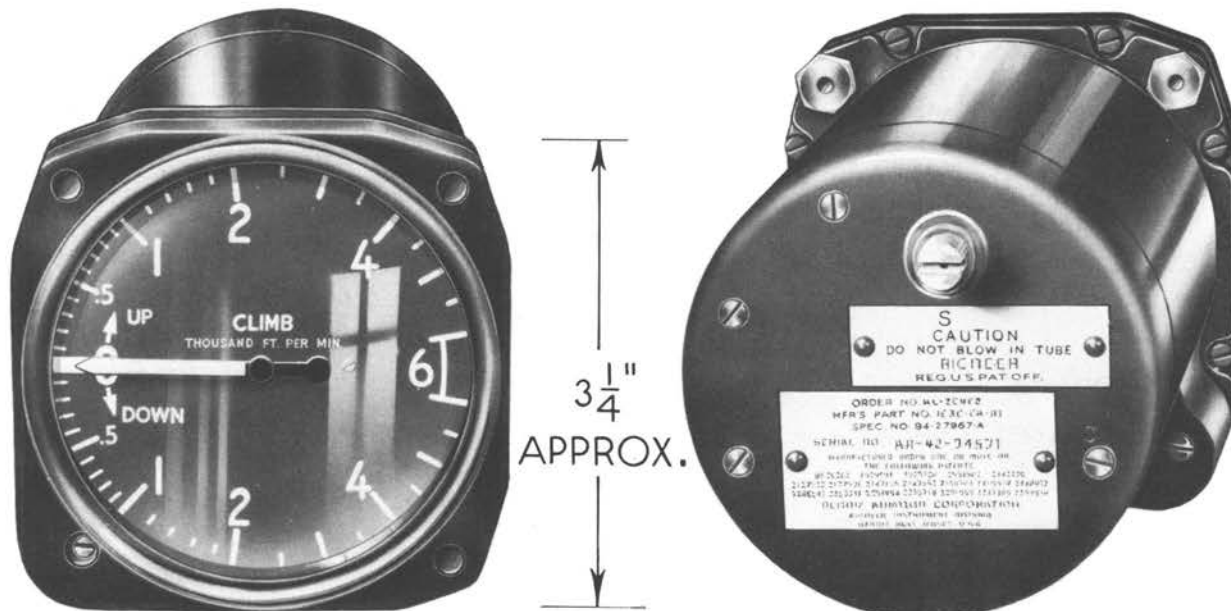
AN PART NUMBER: AN5825-2

F.S.S.C. NUMBER: 88-I-751

PROCUREMENT STATUS: Standard—G.F.E.—Order through A.S.O. by F.S.S.C. number.



RATE-OF-CLIMB INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—RATE-OF-CLIMB

AN5825-1 FORMER ARMY TYPE C-2 F.S.S.C. NUMBER 88-I-750

NAMES: Rate-of-climb indicator
Indicator, climb

Vertical speed indicator

DESCRIPTION: The AN5825-1 rate-of-climb indicator is housed in a 2 $\frac{3}{4}$ inch AN standard dial case, and has a zero-adjusting screw in the lower left corner of the instrument face. It has a logarithmic (compressed) scale dial with graduations from 0 to 6 thousand feet per minute in a clockwise direction for climb, and in a counterclockwise direction for descent.

CHARACTERISTICS:

Dimensions.....	approximately 3 $\frac{1}{4}$ by 3 $\frac{1}{4}$ by 4 $\frac{1}{8}$ inches
Weight.....	approximately 1 $\frac{1}{2}$ pounds
Range.....	0 to 6,000 feet per minute, climb and descent
Static pressure connections.....	$\frac{1}{8}$ inch internal pipe thread
Illumination.....	none. Designed for external fluorescent lighting
Markings: Principal.....	radium luminous material
Minor.....	fluorescent luminous material

ARMY

A. E. REFERENCE NUMBER: 60-6800

SPECIFICATIONS:

Detail.....	AN-GG-I-518
Superseded.....	94-27967

AN DRAWING NUMBER: AN5825

TYPE DESIGNATION: AN5825-1

A.S.C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Gross weight.....	approximately 3 $\frac{1}{2}$ pounds
Dimensions of carton.....	approximately 7 $\frac{1}{2}$ by 7 $\frac{1}{2}$ by 9 $\frac{1}{2}$ inches

(Continued on page 162)



INDICATOR—RATE-OF-CLIMB

(Continued from page 161)

NAVY

SPECIFICATIONS:

Detail.....AN-GG-I-518

Superseded.....SQ-91A

AN DRAWING NUMBER: AN5825

AN PART NUMBER: AN5825-1

F.S.S.C. NUMBER: 88-I-750

PROCUREMENT STATUS: Standard—G.F.E.—Order through A.S.O. by F.S.S.C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Kollsman Instrument Division	716K-03	A-N				
	639K-03	A	6000232130	05-20-27		
	731KN-02	N	6000228863			
	661KN-02	N				
	731KN-04	A-N				Fluorescent markings only.
Pioneer Instrument Division	1636-6A-A1	A-B	6000232140	05-20-17	106A/715	
	1636-6A-B1	A-B	6000232141	05-20-17	106A/715	
	1634-6C-A2	B-C	6000228920		106A/526	
	1636-6F-A1	C				
	1636-6F-B1	C				
	1640-6E-A1	N				
Ford Motor Co.	1636-6A-A1	A-B	6000232140	05-20-17	106A/715	
	1636-6A-B1	A-B	6000232141	05-20-17	106A/715	
Bulova Watch Co.	ROC-1	A	6000228825			



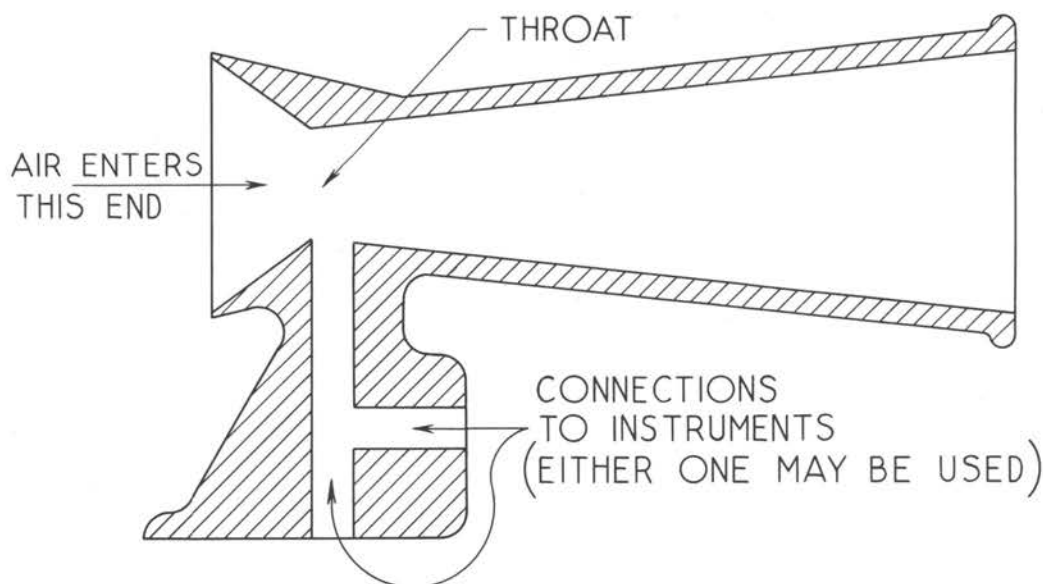
POWER VENTURI TUBES

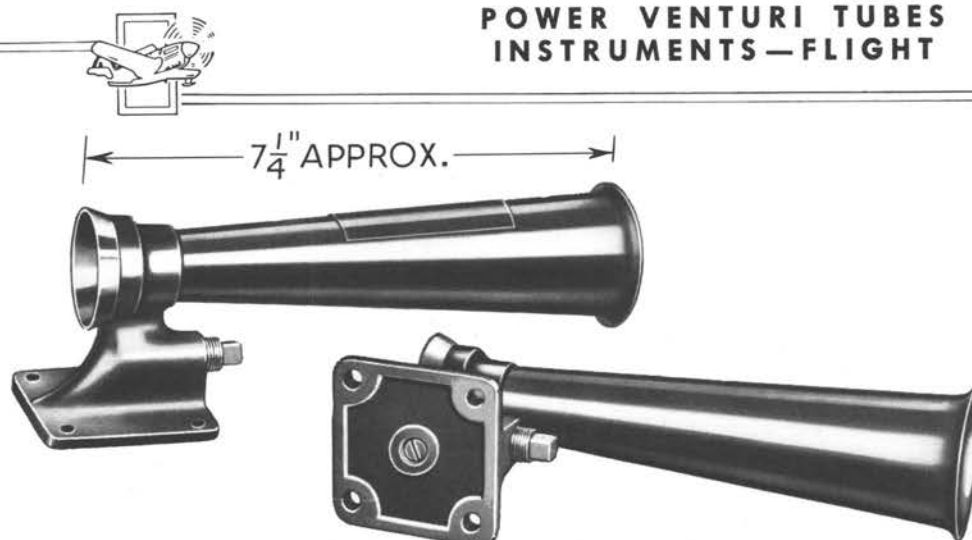
Power venturi tubes provide a source of vacuum for the operation of air-driven instruments.

The venturi is a tube shaped like a double "V" and has a small opening, called a throat, at the junction of the "Vs". It is installed with the small "V" pointed toward the front of the airplane. A volume of air enters the mouth of the tube, flows past the throat, continues through the broadening tube and passes out at the tail end. As the air passes the throat, it expands in the wide part of the tube, creating a partial vacuum. The vacuum draws air from the throat, which in turn sets up a vacuum in the pipe line leading from the instruments.

Normally, the vacuum necessary to operate the aircraft instruments is supplied by an engine-driven vacuum pump. Since a glider has no engine, it is equipped with a power venturi tube to provide the air power required for the few instruments carried. Power venturi tubes are also used in light airplanes where the air demand is low. They may be installed for standby service in airplanes having an air pump, and used in the event of failure of the pump.

Two types of power venturi are used; one has a single throat, the other a double throat. They are alike in performance, but differ in their capacities to supply vacuum air. Venturi tubes are made of either metal or plastic.





TUBE—SINGLE THROAT POWER VENTURI

AN5805-1

FORMER ARMY TYPE A-3A

F. S. S. C. NUMBER 88-T-3570

NAMES: Single throat power venturi tube
Tube—power venturi, type A-3A (Aircraft)
Power venturi tube

Tube, power venturi, turn and bank, single throat
Venturi tube
Power venturi tube assembly

DESCRIPTION: The AN5805-1 power venturi is a single throat tube, used to create a vacuum for the operation of flight instruments.

The venturi tube is mounted in the airstream, and the velocity of the air passing through it creates the vacuum, which is directed through tubing to the instrument.

CHARACTERISTICS:

Dimensions.....approximately 7¼ by 2⅝ by 1¾ inches.

Weight.....approximately $\frac{2}{3}$ pound

Vacuum..... 6.85 inches mercury at 225 miles per hour
airspeed

Mounting.....side of fuselage

ARMY

A. E. REFERENCE NUMBER: 60-9800

SPECIFICATIONS:

Detail.....AN-T-10

Superseded.....94-27858A

AN DRAWING NUMBER: AN5805

AN PART NUMBER: AN5805-1

A. S. C. STOCK NUMBER: 6000454735 (procurement stock number)

TECHNICAL ORDER NUMBER: 05-50-2

PRODUCTION STATUS: Under procurement.

PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....AN-T-10

AN DRAWING NUMBER: AN5805

AN PART NUMBER: AN5805-1

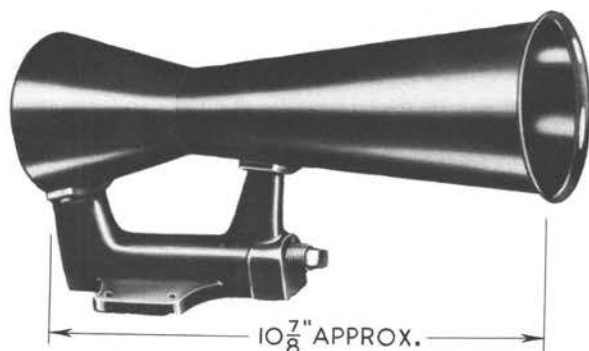
FORMER N. A. F. DRAWING: 39222

F. S. S. C. STOCK NUMBER: 88-T-3570

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	A. A. F. Drawing	Remarks
Manning Bowman & Co.	42-126-156	A-N-B			106A/854		
Cruver Manufacturing Co., Chicago	1252	A					This venturi tube is made of plastic material and is AAF type A-4.
Pioneer Instrument Division	10017-1-A	A-B	6000454700	05-50-2	106A/854	41D6889	Air Corps type A-3; discontinued source. The basic A-3 is converted to A-3A by replacing front cone with a larger one for improved performance.
	10017-2-A	B-C			106A/167		



TUBE — DOUBLE THROAT POWER VENTURI

AN5807-1 FORMER ARMY TYPE B-4

NAMES: Double throat power venturi tube
Power venturi tube
Tube, power venturi (aircraft-double-throat)
Venturi tube

DESCRIPTION: The AN5807-1 power venturi tube is a double throat tube, used to create a vacuum for the operation of flight instruments.

It is mounted in the air stream, and the velocity of the air passing through creates the vacuum, which is directed through tubing to the instruments.

CHARACTERISTICS:

Dimensions	approximately 10 ⁷ / ₈ by 5 ⁵ / ₃₂ by 3 ¹ / ₄ inches
Weight	approximately 1 pound
Vacuum	5.6 inches mercury at 225 miles per hour airspeed
Mounting	side of fuselage
Construction	metal or plastic

ARMY

A. E. REFERENCE NUMBER: 60-9850

SPECIFICATIONS:

Detail	AN-T-10
Superseded	94-27774

AN DRAWING NUMBER: AN5807

AN PART NUMBER: AN5807-1

A. S. C. STOCK NUMBER: 6000456250 (procurement stock number)

TECHNICAL ORDER NUMBER: 05-50-2

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

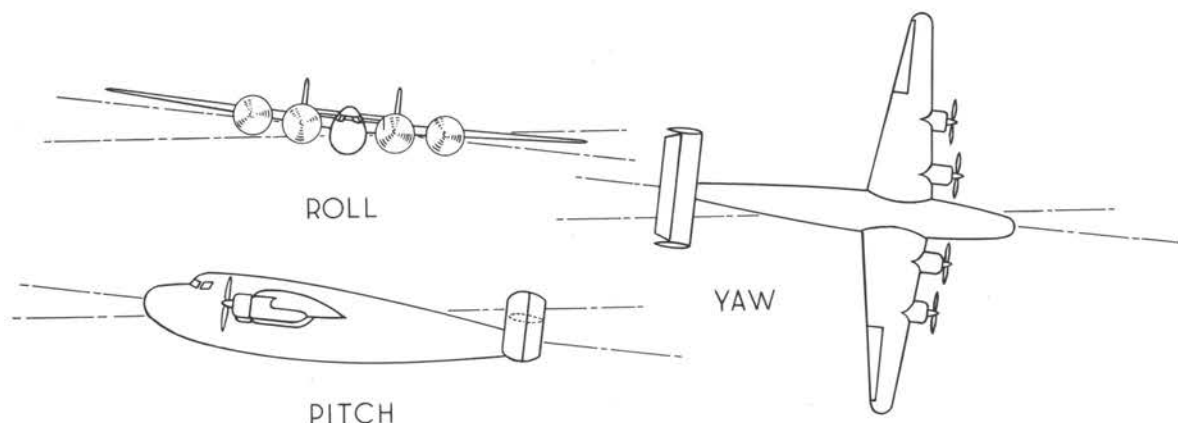
Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Commonwealth Engineering Co.	B-1271	A-B	6000455450	05-50-2	106A/1331	
Manning Bowman & Co.	126-155	A-B			106A/1331	
National Color Type Co.	140305	A-B	6000456250	05-50-2	106A/1331	
	B-1271	A-B	6000455450	05-50-2	106A/1331	
Bersted Mfg. Co.	126-155	A-B			106A/1331	
Cruger Mfg. Co.	1280	A			106A/1331	Plastic.
	1282	A-B			106A/1331	
Sperry Gyroscope Co., Inc.	640541	A-B	6000455750	05-50-2	106A/1331	
	640159	A-B	6000455500	05-50-2	106A/1331	
	640541J	A-B	6000456000		106A/1331	
	640600	A-B	6000456100		106A/1331	



AUTOMATIC PILOTS

An automatic pilot is a mechanism which automatically controls the established flight attitude of an airplane. Through its use, the human pilot is relieved of the strain and fatigue which may result from flights of long duration. It also allows the human pilot to direct his attention to navigation, tactical problems, engine operation or other flight factors.

In addition to maintaining mechanical control, some types also provide visual indication of the attitude of the airplane in yaw, pitch, and roll similar to the indications of the flight and turn indicators.



While the automatic pilot is normally used to maintain straight and level flight, it may also be used with greater precision for normal flight maneuvers, such as climb, descent, turns, spirals, etc., than is possible through manual control. Where required, remote controls for some automatic pilots are installed in such locations that the bombardier or navigator may direct the flight.

The basic principle of the automatic pilot is that the axis of a rapidly spinning gyroscope will remain fixed, or rigid, in space. Any movement of the airplane around the spinning axis sets up an impulse which is transmitted to a device for correcting the deviation.

Corrections for bank and climb in horizontal flight are obtained by reference to a vertically spinning gyro, the axis of which points to the earth's center, while directional control is provided by a gyro spinning horizontally.

The automatic pilot is therefore a combination of two gyroscopes, together with the equipment for transmitting signals, the necessary correcting mechanisms, and a set of controls. When their functions are coordinated, they simulate the operation of the human brain, nerves and muscles. Gyroscopes may be either electrically powered or pneumatically operated.

ELECTRIC AUTOMATIC PILOT

In the electric pilot, the vertical gyroscope consists of an electric rotor turning at 24,000 R.P.M. pivoted in a horizontal, or gimbal ring, which in turn is pivoted in a vertical, or bail ring suspended in the case of the instrument. This type of suspension permits the gyro to remain fixed in space, while the associated equipment is free to move around it. The horizontal gyroscope is mounted in similar fashion.

(Continued on Page 167)

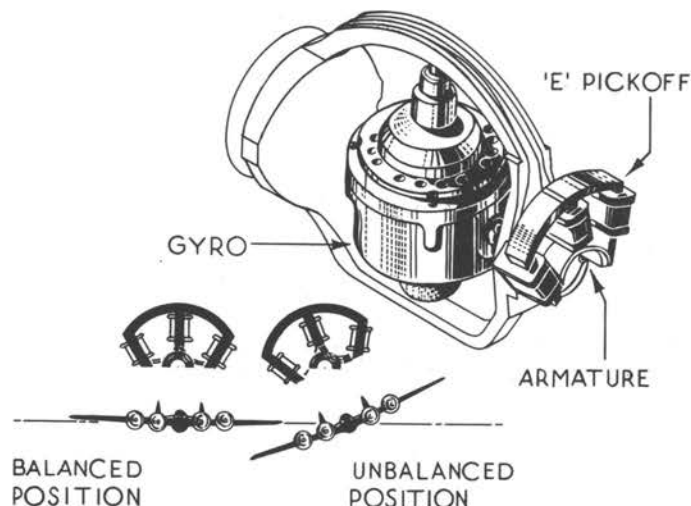


AUTOMATIC PILOTS

(Continued from Page 166)

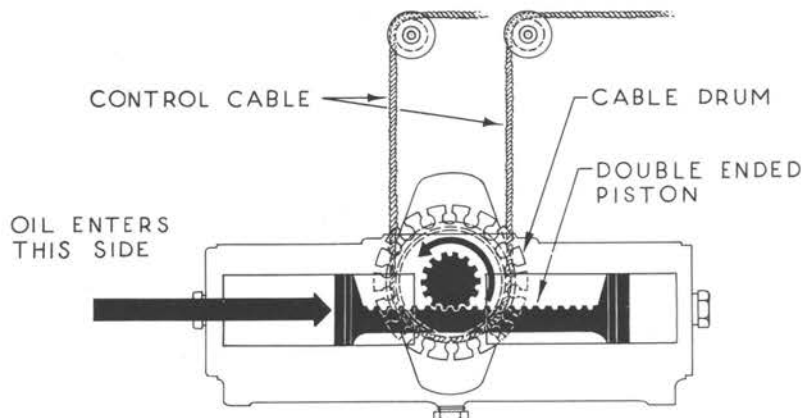
A pick-off is an E-shaped electromagnet having a center primary coil and secondary coils at both ends. When equally spaced about an armature attached to the gyroscope, equal lines of force are set up on either side of the center coil. This is the neutral or balanced condition. Any movement of the airplane from its established course moves the pick-offs, but not the armature, upsetting the balance of forces and creating a voltage differential.

GYRO AND 'E' PICKOFF



This displacement causes a weak electrical signal which is strengthened by thermionic (radio) tubes in an amplifier. The amplified impulse is transmitted to a servo, which is the correcting mechanism. A servo is essentially a hydraulic barrel containing a double-ended piston which, in the balanced condition, is centrally located. The displacement signal energizes one of two solenoid valves in the servo unit, admitting hydraulic fluid and increasing the hydraulic pressure on one side of the piston to move it from its neutral position. The piston is geared to a cable drum which is directly connected by cables to either the ailerons, elevators, or rudder.

The pick-offs are located on the instrument case, which moves with the airplane.



SERVO

(Continued on Page 168)



AUTOMATIC PILOTS

(Continued from Page 167)

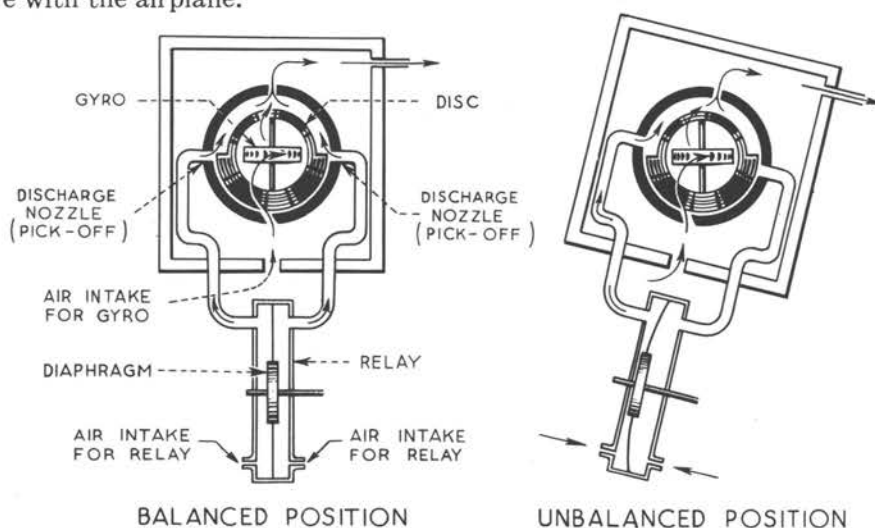
Electric pilots are controlled from the control unit in the cabin or cockpit of the airplane. The control unit contains a switch for turning on or disconnecting the pilot. It also indicates the position of the pick-offs with relation to the plane's attitude.

The panel is equipped with a set of controls for executing maneuvers while the automatic pilot is in operation. The controls are designed to change the location of the pick-offs, to accomplish these maneuvers. The resultant corrections provide the required changes in the flight course.

PNEUMATIC AUTOMATIC PILOT

The gyroscopes in the pneumatic pilot are driven by a continuous jet of air supplied by the engine-driven air pumps. A stream of air also passes through an air relay, which consists of a box divided internally by a diaphragm. An air intake and a nozzle, located on each side of the diaphragm, discharge air to the gyro system.

These two discharge nozzles, which are the pick-off in the pneumatic pilot, are partially covered by a disc attached to the gyro ring. The disc, therefore, is fixed in space, while the air nozzles move with the airplane.

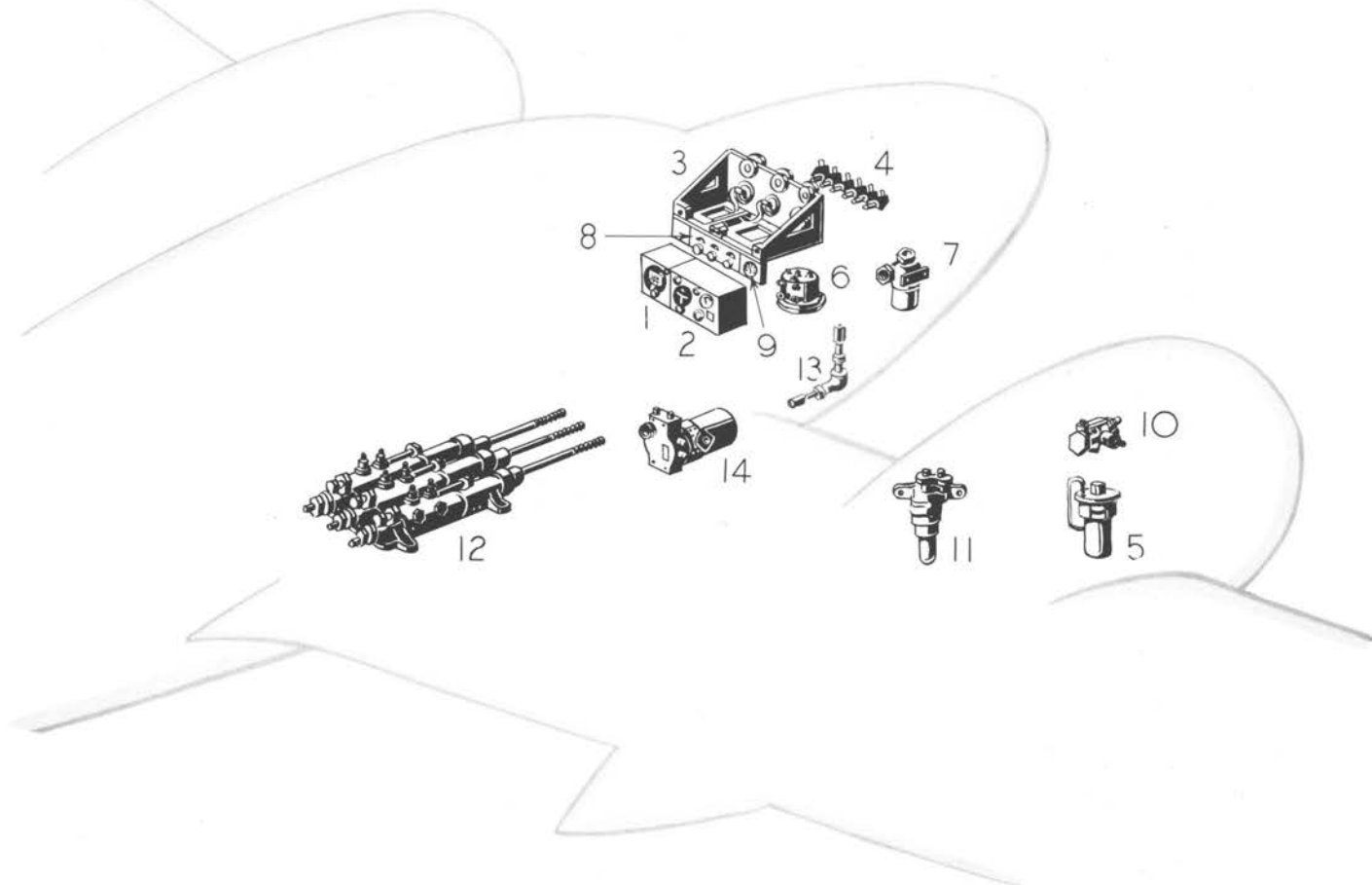


When the airplane is in its desired flight attitude, the knife edge of the disc cuts half the air supply equally at both nozzles, and the air passing on the two sides of the diaphragm exerts equal pressure. This is the neutral condition. Movement of the airplane around the gyro changes the position of the nozzles so that one nozzle is covered by the disc and the other remains exposed. Increased air pressure on one side of the diaphragm moves it to the side where there is less or no pressure. The diaphragm moves a rod which uncovers one of two oil ports, admitting hydraulic fluid to one side of the servo or the other. The resultant change in the position of the piston within the servo hydraulically adjusts the airplane control surfaces to which it is connected.

Regulation is obtained by two control units mounted on the instrument panel. One is the bank and climb gyro control; the other is the directional gyro control. These are actually instruments indicating the attitude of the airplane, to which pick-offs have been attached to provide automatic control. The control units are also equipped with the means for changing the flight course while the automatic pilot is in operation.



AUTOMATIC PILOTS INSTRUMENTS—FLIGHT



AUTOMATIC PILOTS

COMPONENT ITEMS

ARMY TYPE A-3 AND A-3A NAVY MARK 3 AND 3A

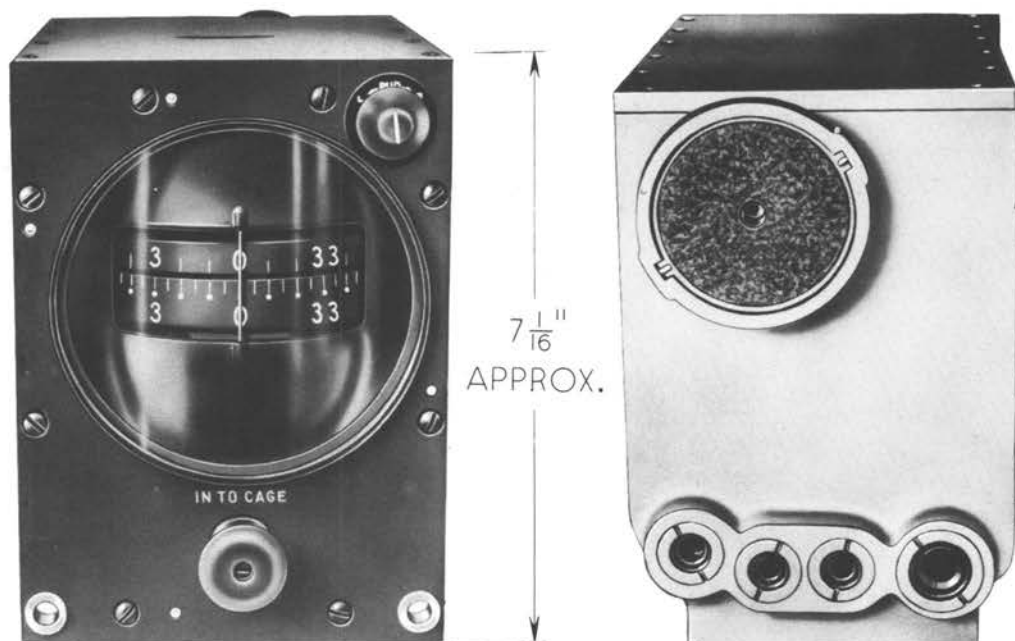
ITEM	NOMENCLATURE	A. E. REFERENCE (Army)	F. S. S. C. NUMBER	REMARKS
1	Directional Gyro Control	60-8202	88-U-165	
2	Vertical Gyro Control	60-8201	88-U-110	
3	Gyro Control Mount	60-8205	88-U-700	60-8208 is substituted for this item
4*	Manifold Block (Straight)	60-8210	Mfr's Part No. JH3211	One used for each installation
	Manifold Block (90 Degree)	60-8211	Mfr's Part No. JH3212	
	Manifold Block (30 Degree)	60-8212	88-M-60	
5*	Oil Sump	None	88-T-370	Used only when oil sump is mounted above gyro control mount level
6*	Drain Oil Trap	60-8328	88-T-2800	
7	Air Filter	60-8303	88-F-1035	
8	Speed Control Valve	60-8207	88-V-180	
9	Oil Pressure Gage	60-3120	88-G-875	
10	Oil Pressure Regulator	60-8206	88-R-245	
11	Oil Filter	60-8204	88-F-1060	
12*	6" Stroke Gang Servo	None	88-S-264	3 Servos cast en bloc, one set used for each installation, or three single cylinders, push pull type, may be used for each installation.
	8" Stroke Gang Servo	60-8224	88-S-265	
	11" Stroke Gang Servo	60-8225	88-S-270	
	14" Stroke Gang Servo	None	88-S-275	

ITEMS USED FOR REMOTE CONTROL INSTALLATIONS

	Directional Gyro Control	60-8252	No Navy Item	Replaces item 1
	Gyro Control Mount	60-8254	No Navy Item	Replaces item 3
13	Flexible Shaft Angle Gear	60-8251	No Navy Item	
14	Turn Controller	60-8253	No Navy Item	

NOTE: *ARMY: All items except 4, 5, 6, and 12 are Government furnished
NAVY: All items listed are G. F. E.

AUTOMATIC PILOTS INSTRUMENTS — FLIGHT



CONTROL—DIRECTIONAL GYRO

A. E. REFERENCE NUMBER 60-8202

F. S. S. C. NUMBER 88-U-165

NAMES: Directional gyro control
Azimuth control

Turn control
Directional control unit

DESCRIPTION: The directional gyro control, a part of the Army type A-3 and A-3A and Navy Mark 3 and 3A automatic pilots, contains the gyroscope which supplies the directional reference for both manual and automatic rudder control. It also contains air pick-offs, and a caging mechanism which locks the gyro to prevent damage to the instrument during maneuvers which exceed its normal operating range.

Two cards, graduated in 360 degrees of azimuth, are located on the dial. The lower card may be set to any desired heading by pushing in and turning the caging knob. When in operation, the automatic pilot maintains the direction of the airplane by manipulation of the rudder to correspond to the heading indicated on the lower card. To make turns with the automatic pilot in operation, the upper or rudder follow-up card is turned with the rudder knob, which is attached directly to the air pick-offs. The indices of this instrument can also be used for reference during manual flight.

CHARACTERISTICS:

Dimensions.....	approximately 5 $\frac{1}{16}$ by 7 $\frac{1}{16}$ by 12 inches
Weight.....	approximately 8 $\frac{1}{2}$ pounds
Power.....	4 inches of mercury vacuum
Markings.....	fluorescent and radioactive fluorescent
Graduations.....	0 to 360 degrees of azimuth

ARMY

A. E. REFERENCE NUMBER: 60-8202

SPECIFICATIONS:

General.....	94-27977-B
Detail.....	94-27978-B
Superseded.....	94-27978-A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

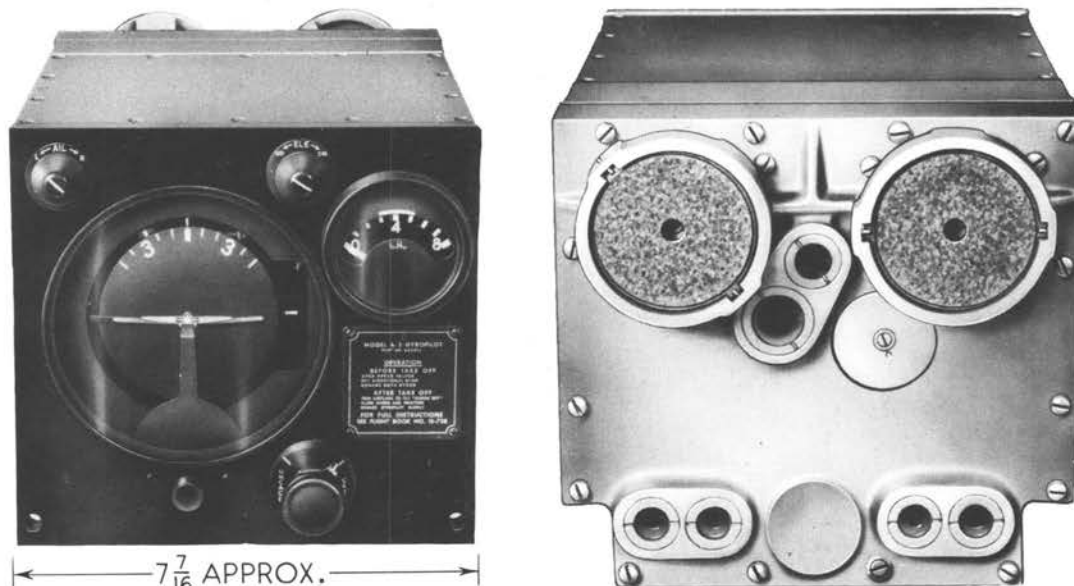
NAVY

F. S. S. C. STOCK NUMBER: 88-U-165

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model (X)	Remarks
Sperry Gyro-scope Co., Inc.	643915	Assembly 643915 Outline 76571	A-N-B-C	6000096500	05-45AB	1061/601		Illuminated by 3-volt dial lamp.
	648010	648010	A-N-B-C	6000096515	05-45AB	1061/750	X	
Jack & Heintz, Inc.	JH5000	JH5000 Outline JH5185	A-N-B	6000096555	05-45BA	1061/692	X	



CONTROL—VERTICAL GYRO

A. E. REFERENCE NUMBER 60-8201

F. S. S. C. NUMBER 88-U-110

NAMES: Vertical gyro control

Bank and climb control (NAVY)

Bank and climb gyro control unit

Horizon control

DESCRIPTION: The vertical gyro control is a part of the Army types A-3 and A-3A, and Navy Mark 3 and 3A, automatic pilots. It contains the gyroscope, which provides a reference for manual or automatic control of the attitude of the airplane, a suction gage, gyro caging device, and mechanism to operate the air pick-off assembly.

The caging device locks the gyro to prevent damage to the instrument during maneuvers which exceed operating limits. In operation, the horizon bar in front of the dial appears to rise as the plane noses down, and to descend as the plane noses up. The horizon bar remains in the horizontal position when the plane banks. The position of the miniature plane in relation to the horizon bar affords the pilot visual indication of the airplane's flight attitude.

The elevator and aileron follow-up indices give a visual indication of the air pick-off settings. The air pick-offs for the ailerons are set by the aileron knob, while the elevator knob provides for adjustment of the elevator. Neutral or no signal positions are set by matching the aileron follow-up index with the bank index, and the elevator follow-up index with the elevator alignment index. For level flight, or preparatory to engaging the automatic pilot, the indices for each control must be matched.

CHARACTERISTICS:

Dimensions.....	approximately 7 $\frac{7}{16}$ by 7 $\frac{1}{16}$ by 12 inches
Weight.....	approximately 13 $\frac{1}{2}$ pounds
Power.....	4 inches of mercury vacuum
Markings.....	fluorescent and radioactive fluorescent

ARMY

A. E. REFERENCE NUMBER: 60-8201

SPECIFICATIONS:

General.....	94-27977-B
Detail.....	94-27979-B
Superseded.....	92-27979-A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

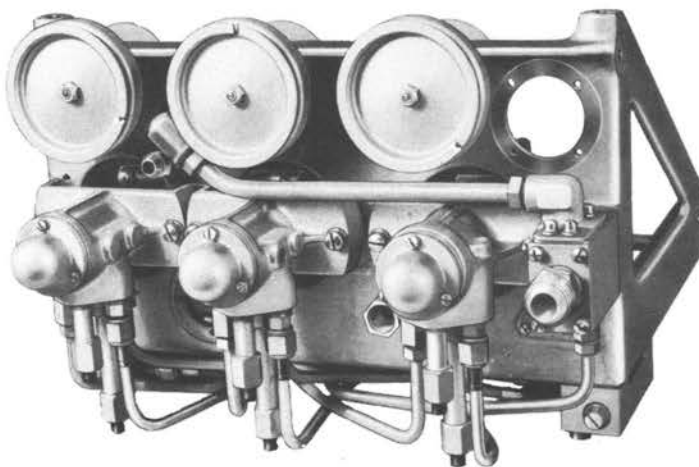
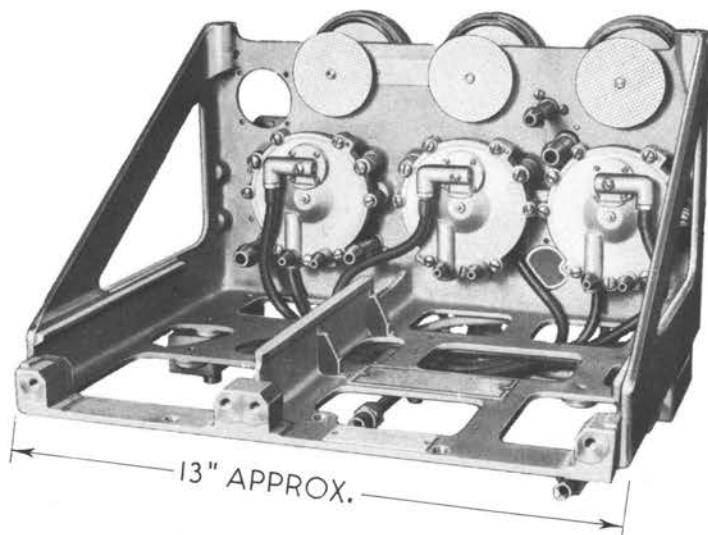
NAVY

F. S. S. C. STOCK NUMBER: 88-U-110

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model (X)	Remarks
Sperry Gyroscope Co., Inc.	643916	Assembly 643916 Outline 644354	A-N-B-C	6000094250	05-45AB	106J/602		Illuminated by 3-volt dial lamp
	648011	648011	A-N-B-C	6000094450	05-45AB	106J/751	X	
Jack & Heintz, Inc.	JH6000	JH6000 Outline JH6260	A-N-B	6000094875	05-45BA	106J/691	X	



MOUNT—GYRO CONTROL

A. E. REFERENCE NUMBER 60-8205

F. S. S. C. NUMBER 88-U-700

NAMES: Gyro control mount
Automatic pilot mounting unit

Gyro pilot mounting unit

DESCRIPTION: The gyro control mount is attached to the structure of the airplane to hold the directional and vertical gyro controls of the Army types A-3 and A-3A and Navy Mark 3 and 3A automatic pilots.

The mount consists of a shock-mounted frame, to which are attached air relays, balance oil valves, follow-up pulleys, pressure and drain manifolds. The air intake connections for the two control units are fitted to the suction manifold, permitting the entire system to be connected through a central air filter.

All connections are made automatically when the gyro controls are slid onto the frame tracks and locked in position.

CHARACTERISTICS:

Dimensions.....approximately 13 by 8 $\frac{9}{16}$ by 15 inches
Weight.....refer to the chart

ARMY

A. E. REFERENCE NUMBER: 60-8205

SPECIFICATIONS:

General.....94-27977-B
Detail.....94-27980-A
Superseded.....94-27980

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

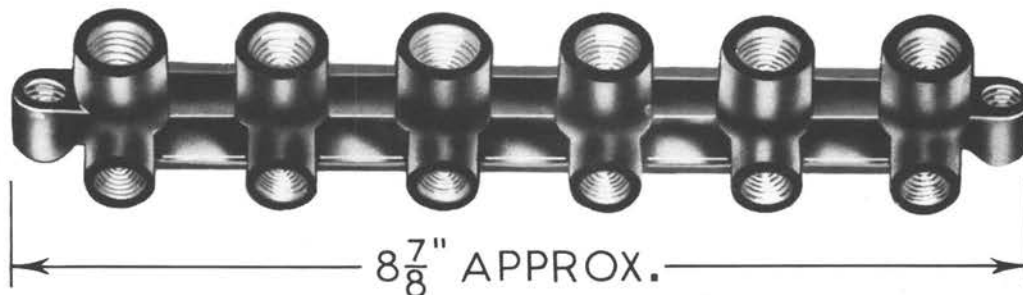
NAVY

F. S. S. C. STOCK NUMBER: 88-U-700

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Weight
Sperry Gyro-scope Co.	643917	Assembly 643917 Outline 644393	A-N-B-C	6000298000	05-45AB	106J/603	10 $\frac{3}{4}$ pounds
Jack & Heintz	JH4000	JH4000 Outline JH4127	A-N-B	6000298710	05-45BA	106J/690	8 $\frac{1}{2}$ pounds



BLOCK—MANIFOLD

A. E. REFERENCE NUMBERS 60-8210, 60-8211, 60-8212 F. S. S. C. NUMBERS 88-M-60, 88-M-62

NAME: Manifold block

DESCRIPTION: This unit, a part of the Army type A-3, A-3A and the Navy Mark 3 and 3A automatic pilots, provides a junction for connecting the flexible and rigid oil lines. It is attached to the structure of the airplane, adjacent to the gyro control mount.

It consists of a block with six $\frac{1}{4}$ -inch standard pipe thread openings for attaching the flexible tubing from the gyro control mount, and six $\frac{1}{8}$ -inch standard pipe thread openings, at an angle, for attaching the rigid metal tubing which is connected to the servo. The mount assembly is isolated from vibration of the aircraft structure without the necessity for running flexible hoses from the gyro control to the servos through the use of this manifold block.

For convenience in installation, the manifold blocks are furnished with inlets and outlets 180°, 90° and 30° apart.

CHARACTERISTICS:

Dimensions.....refer to chart
Weight.....refer to chart

(Continued on Page 174)



BLOCK—MANIFOLD

(Continued from Page 173)

ARMY

A. E. REFERENCE NUMBER: Refer to chart.

SPECIFICATIONS:

General 94-27977-B

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

A. S. O. OR F. S. S. C. STOCK NUMBER: Refer to chart.

PROCUREMENT STATUS: Refer to chart.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 6
A-Army, N-Navy, B-British, C-Commercial

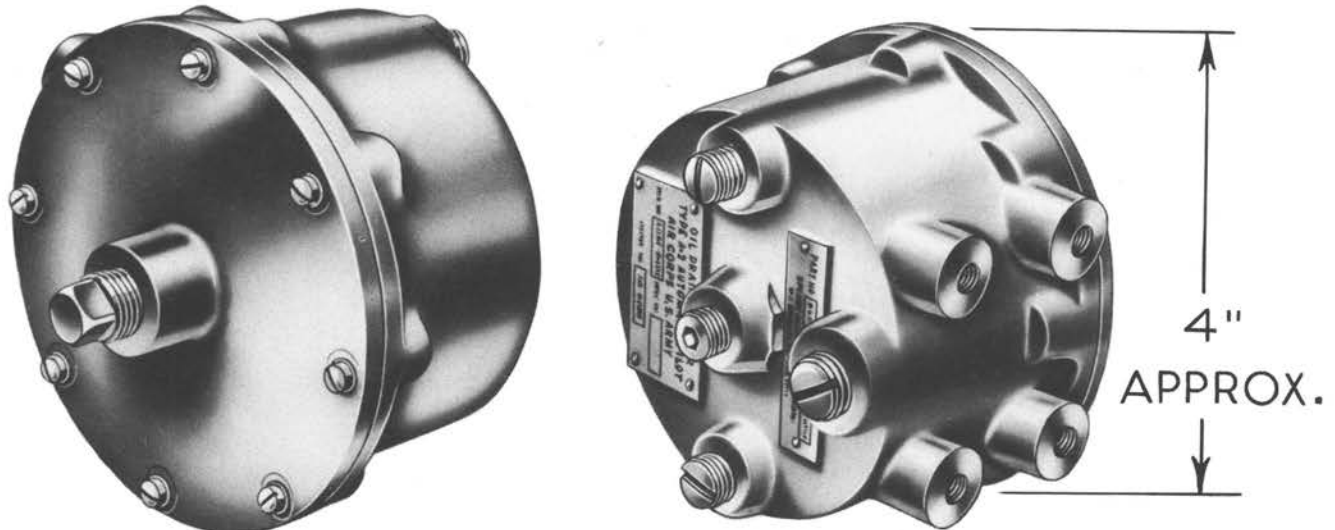
Manufacturer	Manufacturer's Part and Drawing Number	Angle Between Openings	Dimensions (Inches Approx- imately)	Weight (Ounces Approx- imately)	Used By	A. E. Reference Number	Air Service Command Stock Number	Army Technical Order Number	F. S. S. C. Number	British Reference Number
Jack & Heintz, Inc.	JH3211	Straight	6½ by 1½ by ⅞	4	A-N-B	60-8210	6300520868	05-45BA		106J/714 †
	JH3212	90 degree	8⅞ by 1¼ by 1¼	4	A-N-B	60-8211	6300520870	05-45BA		106J/712 †
	JH3213	30 degree	10⅞ by 1⅝ by ⅞	5	A-N-B	60-8212	6300520872	05-45BA	88-M-60	106J/713 ‡
Sperry Gyroscope Co., Inc.	801011	See Note*	11¾ by 1½ by 4½	6	A-N-B-C		6300521973	05-45AB	88-M-62	106J/609 ‡

*NOTE: Has twelve ⅛-inch pipe thread openings, providing straight or 90° angle between inlet and outlet. Interchangeable with any of the above by blanking off with plugs the six ⅛-inch openings not used.

Navy Procurement:

†Standard. G. F. E.—Order through A. S. O. by Manufacturer's Part Number.

‡Standard. G. F. E.—Order through A. S. O. by F. S. S. C. Number.



TRAP—DRAIN OIL

A. E. REFERENCE NUMBER 60-8328
F. S. S. C. NUMBER 88-T-2800

NAMES: Drain oil trap
Oil drain trap

Oil type trap

DESCRIPTION: The drain oil trap, a part of the Army type A-3, A-3A and A-4, and the Navy Mark 3, Mark 3A and Mark 4 automatic pilots, is used only in installations where the balanced oil valve is placed below the level of the oil sump.

The function of the unit is to accumulate the drain oil from the transfer valve, and, through the use of a vent, to eliminate air from the hydraulic system as the oil is returned thereto.

CHARACTERISTICS:

Dimensions.....approximately 3½ by 4 by 4 inches
Weight.....approximately ¾ pound

ARMY

A. E. REFERENCE NUMBER: 60-8328

SPECIFICATIONS:

General.....94-27977-B
Detail.....94-27770A
Superseded.....94-27770

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-45AC

PRODUCTION STATUS: Under procurement (from Navy).

SHIPPING DATA: Shipped as a complete unit.

NAVY

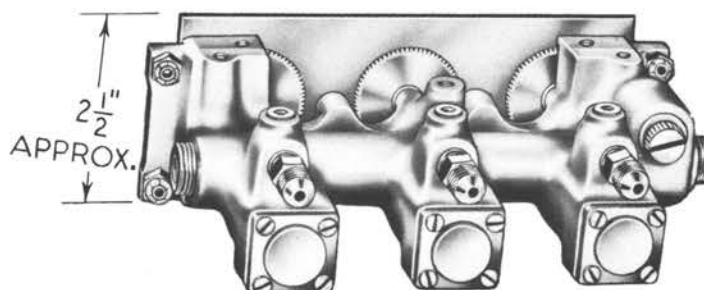
BUREAU OF AERONAUTICS SPECIFICATIONS: SE-8A

F. S. S. C. NUMBER: 88-T-2800

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	641775	641775 Outline 89878	A-N-B	6000443000	05-45AC	106J/611
Jack & Heintz, Inc.	JH3050	JH3050 Outline JH3114	A-N-B	6000442900	05-45BA	106J/706



VALVE—SPEED CONTROL

A. E. REFERENCE NUMBER 60-8207
F. S. S. C. NUMBER 88-V-180

NAMES: Speed control valve
Speed valve

Speed control valve for aircraft automatic pilots

DESCRIPTION: The speed control valve is used to regulate the rate of flow of oil from the servos of the Army type A-3, A-3A and A-4 and Navy Mark 3, 3A and 4 automatic pilots. It consists of three identical valves, marked, respectively, "RUDDER" "AILERON" and "ELEVATOR". The speed control valve determines the responsiveness of the automatic pilot when the attitude of the airplane changes, by controlling the rate of oil flow from the servos.

The speed control valve is usually mounted at the bottom of the gyro control mount assembly, but may be located anywhere in the cockpit, convenient to the pilot. The control knobs are turned counterclockwise for quicker response, and clockwise for slower response. The numbers on the dials indicate the degree of opening or closing.

CHARACTERISTICS:

Dimensions.....approximately $7\frac{17}{32}$ by $2\frac{1}{2}$ by $4\frac{9}{32}$ inches
Weight.....approximately $2\frac{1}{5}$ pounds

ARMY

A. E. REFERENCE NUMBER: 60-8207

SPECIFICATIONS:

General.....94-27977-B
Detail.....94-27985
Superseded.....27985

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-45AB

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

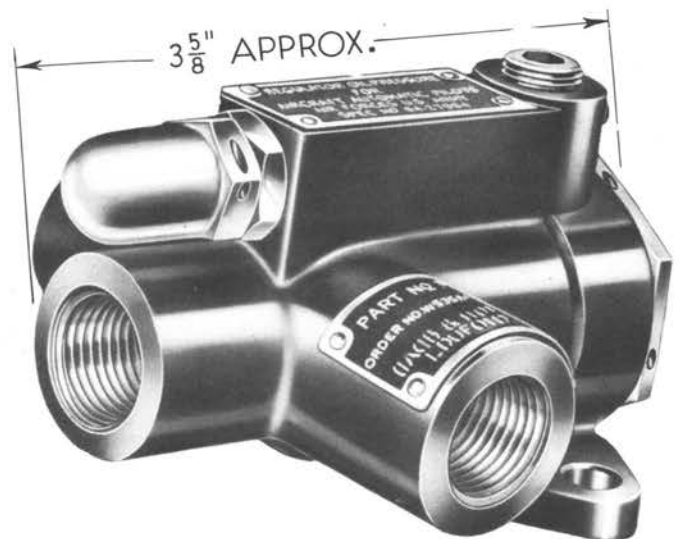
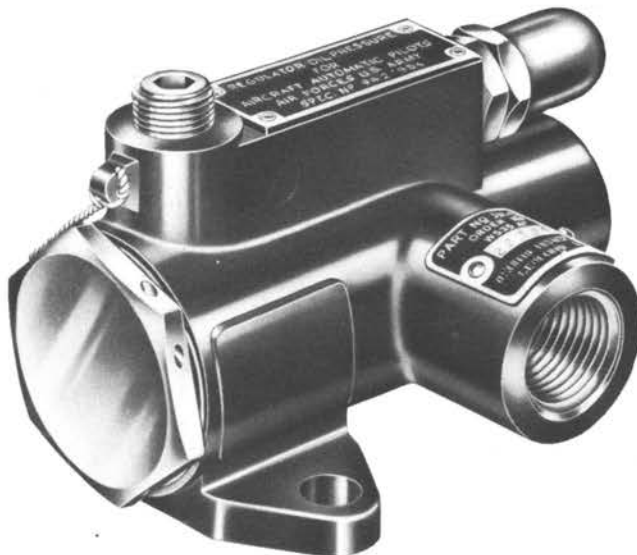
NAVY

F. S. S. C. STOCK NUMBER: 88-V-180

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644255	Assembly 644255 Outline 76627	A-N-B-C	6000469050	05-45AB	106J/608
Jack & Heintz, Inc.	JH3100	JH3100 Outline JH3109	A-N-B	6000469025	05-45BA	106J/708



REGULATOR—OIL PRESSURE

A. E. REFERENCE NUMBER 60-8206
F. S. S. C. NUMBERS 88-R-245, 88-R-255

NAMES: Oil pressure regulator
3/8 inch relief valve assembly

Pressure reducer
Relief valve assembly

DESCRIPTION: The oil pressure regulator of the Army types A-3, A-3A and A4 and the Navy Mark 3, 3A and 4 automatic pilots automatically regulates the pressure from the oil pump. It returns the oil to the sump, or reservoir, whenever the balanced oil valve cuts off oil circulation to the servos, and is adjustable, to maintain the required oil pressure at the balanced oil valves. This regulator may be mounted on top of the sump, or separately, when the airplane has its own hydraulic system with a central oil reservoir. The regulator has two connections for overflow oil, the one used depending upon installation space. It also has one connection for regulated oil to the balanced oil valve and the other for the oil pressure line from the pump.

CHARACTERISTICS:

Pressure range.....	minimum 50 pounds per square inch maximum 300 pounds per square inch
Maximum flow.....	three gallons per minute
Dimensions.....	approximately 3 5/8 by 2 5/16 by 4 13/32 inches
Weight.....	approximately 1 1/8 pounds

ARMY

A. E. REFERENCE NUMBER: 60-8206
SPECIFICATIONS:

General.....	94-27977-B
Detail.....	94-27984-A
Superseded.....	94-27984

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

F. S. S. C. STOCK NUMBER: Refer to chart.

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

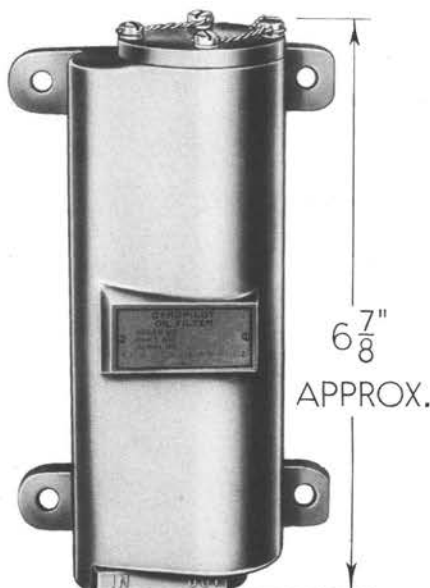
Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	F. S. S. C. Number	Remarks
Sperry Gyro-scope Co., Inc.	644256	Assembly 644256 Outline 801063	A-N-B-C	6000320300	05-45AB	106J/619	88-R-255	Not interchangeable if regulator is to be mounted on oil sump. Has one overflow connection only.
Jack & Heintz, Inc.	JH3120	JH3120 Outline JH3264	A-N-B	6000320400	05-45BA	106J/707	88-R-245	
Vickers, Inc.	43689	43689	A-N-B-C		05-45AB	106/619	88-R-255	
General Elec. Co.	GE8292141-G1		N-B			106J/619	88-R-255	
Air Accessories	40016		B			106J/619	88-R-255	



AUTOMATIC PILOTS INSTRUMENTS — FLIGHT



JACK & HEINTZ
SKINNER DESIGN



SPERRY DESIGN



SPERRY
PUROLATOR DESIGN

FILTER — OIL

A. E. REFERENCE NUMBER 60-8204

F. S. S. C. NUMBER 88-F-1060

NAMES: Oil filter
Automatic pilot oil filter

Filter; oil, for aircraft automatic pilot

DESCRIPTION: This oil filter is part of the Army type A-3, A-3A and A-4 and Navy Mark 3, 3A and 4 automatic pilots. It has a replaceable filter element and is mounted in the oil line of the automatic pilot hydraulic system to strain out foreign matter and provide a continuous supply of clean oil to the servos. The filter element can be removed for cleaning or replacement without disconnecting the oil lines.

The filter is installed between the oil pressure regulator and the pressure manifold on the gyro control mount assembly.

CHARACTERISTICS:

Dimensions.....	Refer to chart
Weight.....	Refer to chart
Cartridge.....	Removable
Capacity.....	2½ gallons per minute

ARMY

A. E. REFERENCE NUMBER: 60-8204

SPECIFICATIONS:

General.....	94-27977-B
Detail.....	94-27983-A
Superseded.....	94-27983

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-45AB

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

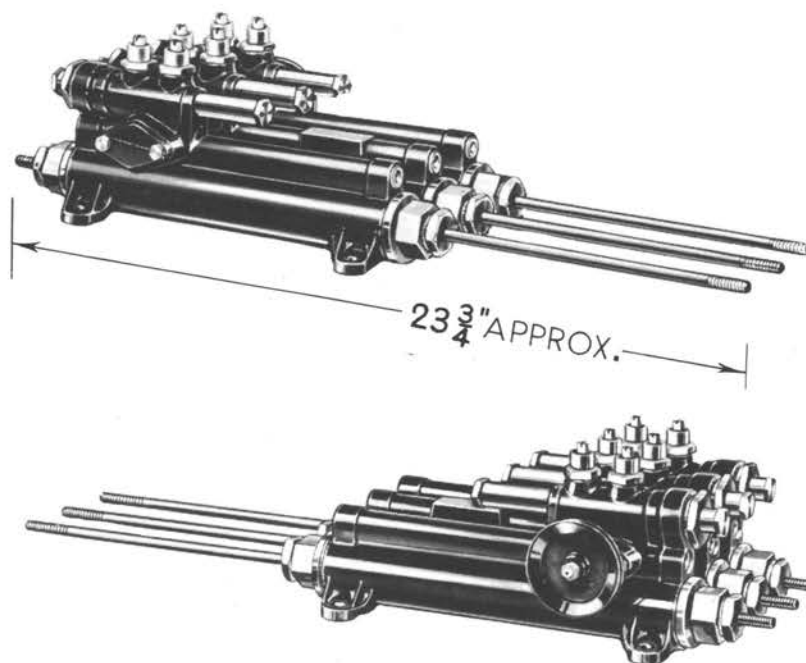
F. S. S. C. STOCK NUMBER: 88-F-1060

BuAer TECHNICAL ORDER NUMBER: 24-42

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 7
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Approximate Dimensions (Inches)	Approximate Weight (Pounds)	Current Model (X)	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644100	Assembly 644100 Outline 800867	4 x 6¾ x 2¼	1¼		A-N-B-C	6000104100	05-45AB	106J/612
	647983	647983	4 x 6⅞ x 2¼	¾	X	A-N-B-C			106J/705
	648039	648039	4 x 6¾ x 2¼	1½	X	A-N-B-C	6000104075	05-45AB	106J/705
Jack & Heintz, Inc.	JH3126	JH3126	4 x 6⅞ x 2¼	¾	X	A-N-B	6000104050	05-45BA	106J/705
Purolator Prod., Inc.	PR93	28768	4 x 6½ x 2¾	1½	X	A-N-B-C	6000104065	05-45AB	106J/705
Skinner Purifiers, Inc.	27400	27400	4 x 6⅞ x 2¼	¾	X	A-N-B-C	6000104060	05-45BA	106J/705



SERVO—8 INCH STROKE GANG

A. E. REFERENCE NUMBER 60-8224

F. S. S. C. NUMBER 88-S-265

NAMES: 8 inch stroke gang servo
Hydraulic surface control
Mechanical by-pass hydraulic surface control

Triple double-end type hydraulic surface control
Double-end type three bank servo

DESCRIPTION: This unit, a part of the Army type A-3 and A-3A and the Navy Mark 3 and 3A automatic pilots, consists of three cylinders cast in one piece. Inside each cylinder there is an hydraulically actuated piston. A rod on both ends of the piston extends outside the servo and is connected by cables to either the ailerons, elevators, or rudder. Any movement of the piston from its neutral position is therefore communicated directly to the airplane control with which it is connected.

A manually operated by-pass valve is provided for engaging or disengaging the automatic pilot.

Relief or overpower valves are built into each cylinder, permitting the human pilot, if necessary, to overpower the automatic pilot by applying increased force to the controls.

ARMY

A. E. REFERENCE NUMBER: 60-8224

SPECIFICATIONS:

General.....	94-27977-B
Detail.....	94-27981-B
Superseded.....	94-27981-A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

A. S. S. C. STOCK NUMBER: 88-S-265

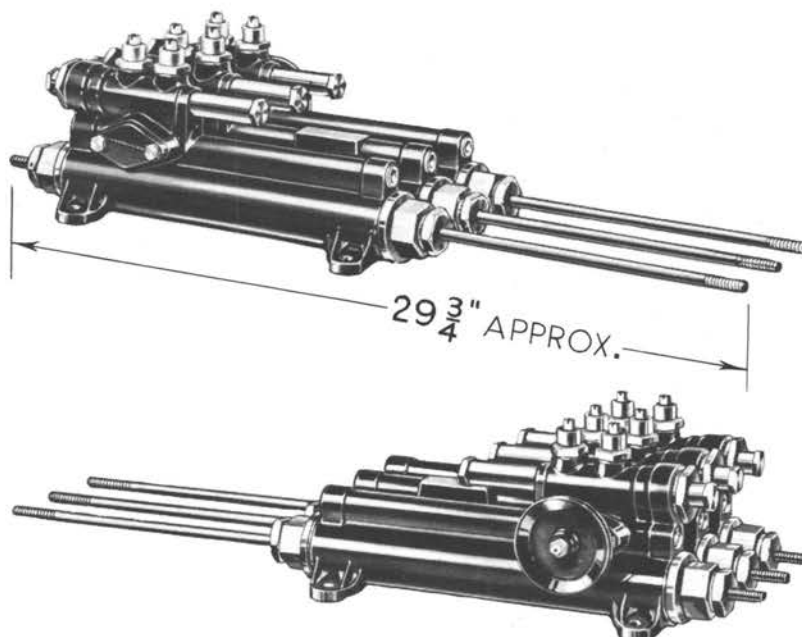
PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTECHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644191	644191 Outline 644359	A-N-B-C	6000097320	05-45AB	106J/606
Jack & Heintz, Inc.	JH3110	JH3110 Outline JH3087	A-N-B	6000097275	05-45BA	106J/688



AUTOMATIC PILOTS INSTRUMENTS—FLIGHT



SERVO—11 INCH STROKE GANG

A. E. REFERENCE NUMBER 60-8225

F. S. S. C. NUMBER 88-S-270

NAMES: 11 inch stroke gang servo
Hydraulic surface control
Mechanical by-pass hydraulic surface control

Triple double-end type hydraulic surface control
Double-end type three bank servo (Navy)
Hydraulic type servo unit

DESCRIPTION: This unit, a part of the Army type A-3 and A-3A and the Navy Mark 3 and 3A automatic pilots, consists of three cylinders cast in one piece. Inside each cylinder there is an hydraulically actuated piston. A rod on both ends of the piston extends outside the servo, and is connected by cables to either the ailerons, elevators, or rudder. Any movement of the piston from its neutral position is therefore communicated directly to the airplane control with which it is connected.

A manually operated by-pass valve is provided, for engaging or disengaging the automatic pilot.

Relief or overpower valves are built into each cylinder, permitting the human pilot, if necessary, to overpower the automatic pilot by applying increased force to the controls.

CHARACTERISTICS:

Dimensions.....approximately 29 $\frac{3}{4}$ by 9 $\frac{3}{32}$ by 5 $\frac{1}{4}$ inches
Weight.....approximately 14 $\frac{1}{2}$ pounds

ARMY

A. E. REFERENCE NUMBER: 60-8225

SPECIFICATIONS:

General.....94-27977-B
Detail.....94-27981-B
Superseded.....94-27981-A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

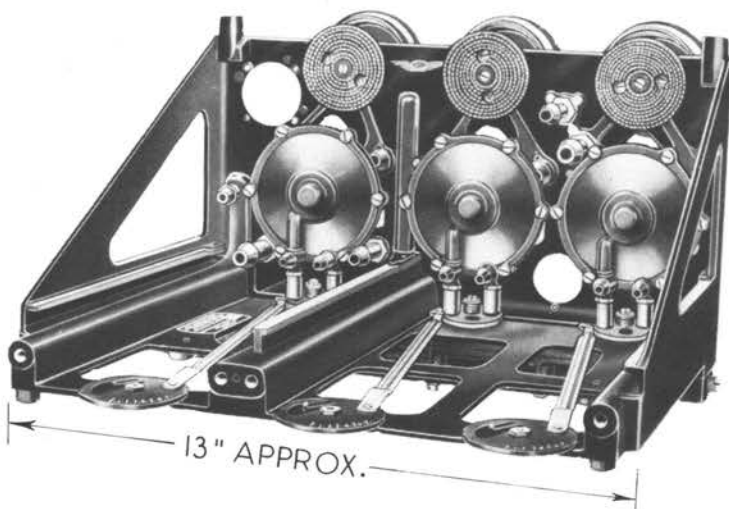
NAVY

F. S. S. C. STOCK NUMBER: 88-S-270

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644192	644192 Outline 644360	A-N-B-C	6000097380	05-45AB	106J/607
Jack & Heintz, Inc.	JH3000	JH3000 Outline JH3049	A-N-B	6000097335	05-45BA	106J/689



MOUNT—GYRO CONTROL

A. E. REFERENCE NUMBER 60-8208

NAMES: Gyro control mount
Automatic pilot mounting unit
Gyro pilot mounting unit

DESCRIPTION: The gyro control mount is attached to the structure of the airplane to hold the directional and vertical gyro controls of the Army types A-3, and A-3A, and the Navy Mark 3 and 3A, automatic pilots.

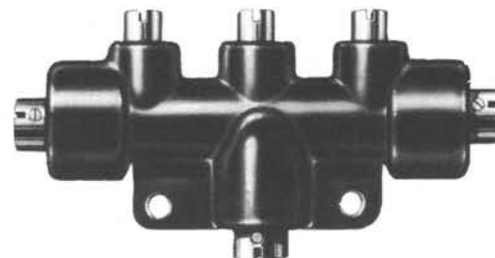
The mount consists of a shock-mounted frame, to which air relays, balanced oil valves, follow-up pulleys, pressure and drain manifolds are attached. The air intake connections for the two control units are fitted to the suction manifold, permitting the entire system to be connected through a central air filter.

All connections are automatically made when the gyro controls are slid onto the frame tracks and locked in position.

Since the speed control valves are built into this mount, a separate oil manifold providing three connections for the oil supply is shipped with the mount. The manifold is mounted on the structure of the airplane, near the mount.

CHARACTERISTICS:

Dimensions.....approximately 13 by 8 $\frac{9}{16}$ by 15 inches
Weight.....approximately 9 $\frac{1}{4}$ pounds



ARMY

A. E. REFERENCE NUMBER: 60-8208

SPECIFICATIONS:

General.....94-27977-B
Detail.....94-27980
Superseded.....27980

MANUFACTURER: Jack and Heintz, Inc.

MANUFACTURER'S PART NUMBER: JH4000-1

A. S. C. STOCK NUMBER: 6000298895

TECHNICAL ORDER NUMBER: 05-45BA

PRODUCTION STATUS: Under procurement.

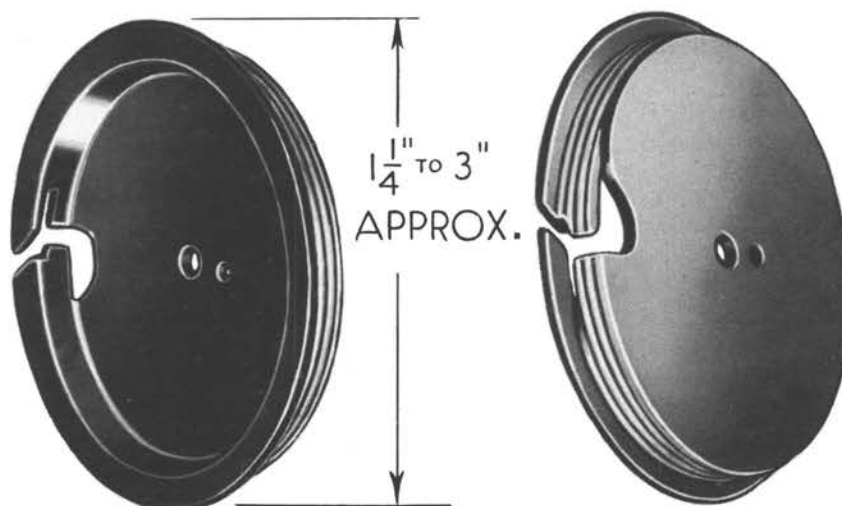
SHIPPING DATA: Mount and oil manifold, Jack and Heintz part number JH3139, shipped as one unit.

NAVY

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by Manufacturer's Part Number.

BRITISH

BRITISH REFERENCE NUMBER: 106J/760.



PULLEY—FOLLOW-UP

NAME: Follow-up pulley

DESCRIPTION: The follow-up pulley, varying in size from 1 to 2 $\frac{3}{4}$ inches in diameter, according to the installation requirements, is a part of the Army type A-3A and the Navy Mark 3A automatic pilot. Three pulleys are required for each installation, and they are attached to the gyro control mount.

The pulley, of single flange construction, has a number of grooves to guide the cable, and can be used to accommodate the cable from servos either to the right or left of the mount assembly.

CHARACTERISTICS:

Dimensions.....refer to the chart.

Weight.....approximately $\frac{3}{4}$ ounce

ARMY

A. E. REFERENCE NUMBER: Refer to chart.

SPECIFICATIONS:

General.....94-27977-B

Detail.....94-27980-A

Superseded.....94-27980

A. S. C. STOCK NUMBER: Refer to chart.

RECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

F. S. S. C. STOCK NUMBER: Refer to chart.

PROCUREMENT STATUS: Under procurement. Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

(Continued on Page 183)



PULLEY—FOLLOW-UP

(Continued from Page 182)

TABULATED ITEMS BELOW ARE NOT INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

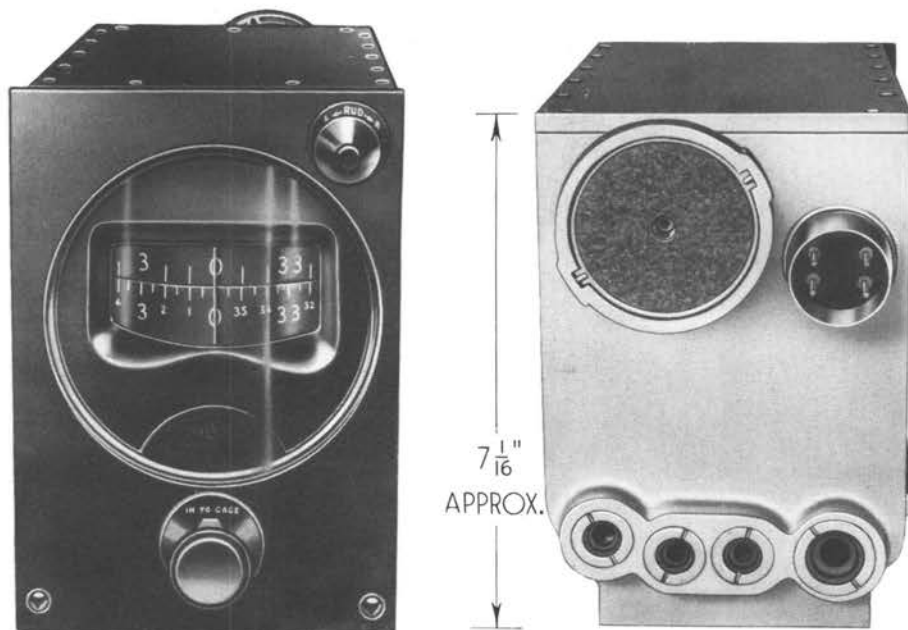
Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	A. E. Reference Number	Pulley Diameter	F. S. S. C. Number
Jack & Heintz, Inc.	JH20-1	A-N-B	6000310200	05-45BA	106J/718	60-8213	1 inch	88-P-1050
	JH20-2	A-N-B	6000310250	05-45BA	106J/721	60-8214	1 1/8 inches	88-P-1051
	JH20-3	A-N-B	6000310300	05-45BA	106J/724	60-8215	1 1/4 inches	88-P-1052
	JH20-4	A-N-B	6000310350	05-45BA	106J/703	60-8216	1 3/8 inches	88-P-1053
	JH20-5	A-N-B	6000310400	05-45BA	106J/729	60-8217	1 1/2 inches	88-P-1054
	JH20-6	A-N-B	6000310450	05-45BA	106J/732	60-8218	1 5/8 inches	88-P-1055
	JH20-7	A-N-B	6000310500	05-45BA	106J/735	60-8219	1 3/4 inches	88-P-1056
	JH20-8	A-N-B	6000310550	05-45BA	106J/738	60-8220	2 inches	88-P-1057
	JH20-9	A-N-B	6000310600	05-45BA	106J/741	60-8221	2 1/4 inches	88-P-1058
	JH20-10	A-N-B	6000310650	05-45BA	106J/744	60-8222	2 1/2 inches	88-P-1059
	JH20-11	A-N-B	6000311100	05-45BA	106J/747	60-8223	2 3/4 inches	88-P-1060

NOTE: Follow-up pulleys made by the Sperry Gyroscope Company are made specifically for right and left hand installation. Jack & Heintz pulleys may be replaced by Sperry pulleys of the same diameter, but proper consideration must be given to direction of rotation.

TABULATED ITEMS BELOW ARE NOT INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Diameter	Used By	A. S. C. Stock Number	Army Technical Order Number	F. S. S. C. Number	British Reference Number	Remarks
Sperry Gyroscope Co.	162703	1 1/4 inches	A-N-B	6000312275	05-45AB	88-P-1075	106J/728	Left Hand
	162702	1 1/2 inches	A-N-B	6000315300	05-45AB	88-P-1080	106J/727	Right Hand
	178855	1 5/8 inches	A-N-B	6000315550	05-45AB	88-P-1080-100	106J/730	Right Hand
	178846	1 3/4 inches	A-N-B	6000312775	05-45AB	88-P-1081	106J/734	Left Hand
	178847	2 inches	A-N-B	6000313100	05-45AB	88-P-1082	106J/737	Left Hand
	178848	2 1/4 inches	A-N-B	6000313275	05-45AB	88-P-1083	106J/740	Left Hand
	178849	2 1/2 inches	A-N-B	6000313525	05-45AB	88-P-1084		Left Hand
	178850	2 3/4 inches	A-N-B	6000313775	05-45AB	88-P-1085	106J/746	Left Hand
	178857	2 inches	A-N-B	6000316100	05-45AB	88-P-1086	106J/736	Right Hand
	178858	2 1/4 inches	A-N-B	6000316275	05-45AB	88-P-1087	106J/739	Right Hand
	178859	2 1/2 inches	A-N-B	6000316550	05-45AB	88-P-1088	106J/742	Right Hand
	178860	2 3/4 inches	A-N-B	6000316775	05-45AB	88-P-1089	106J/745	Right Hand

NOTE: Sperry pulleys may be replaced by pulleys of the same diameter manufactured by Jack & Heintz, Inc., since Jack & Heintz pulleys are designed for either direction of rotation.



CONTROL—REMOTE CONTROL DIRECTIONAL GYRO

A. E. REFERENCE NUMBER 60-8252

NAMES: Remote control directional gyro control
Directional gyro control (for remote control operation)

Azimuth gyro control

DESCRIPTION: This directional gyro control, which provides for remote control of the rudder, is a part of the Army types A-3 and A-3A automatic pilots. It contains the gyroscope which supplies the directional reference for both manual and automatic rudder control. It also contains air pick-offs, and a caging mechanism to lock the gyro and prevent damage during maneuvers which exceed its normal operating range.

This unit is equipped with a 24 volt direct current reversible motor which is geared to the air pick-offs through a differential and clutch, to enable a remote turn controller to be used.

Two cards, graduated in 360 degrees of azimuth, are located on the dial. The lower card may be set to any desired heading by pushing in and turning the caging knob. The upper, or rudder follow-up, may be set by turning the rudder knob, which is attached directly to the pick-offs. Pick-offs are neutral when the two card readings coincide. The upper card can also be used by the pilot, during manual flight, to maintain a desired course.

When this remote control directional gyro control is used, the gyro control mount, A. E. Reference Number 60-8254, must be used.

CHARACTERISTICS:

Dimensions.....	approximately 5 $\frac{1}{16}$ by 7 $\frac{1}{16}$ by 12 inches
Weight.....	approximately 9 $\frac{3}{4}$ pounds
Power.....	4 inches of mercury vacuum
Markings.....	fluorescent
Graduations.....	0 to 360 degrees azimuth

ARMY

A. E. REFERENCE NUMBER: 60-8252

SPECIFICATIONS:

General.....	94-27977-B
Detail.....	94-27978-B
Superseded.....	94-27978-A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

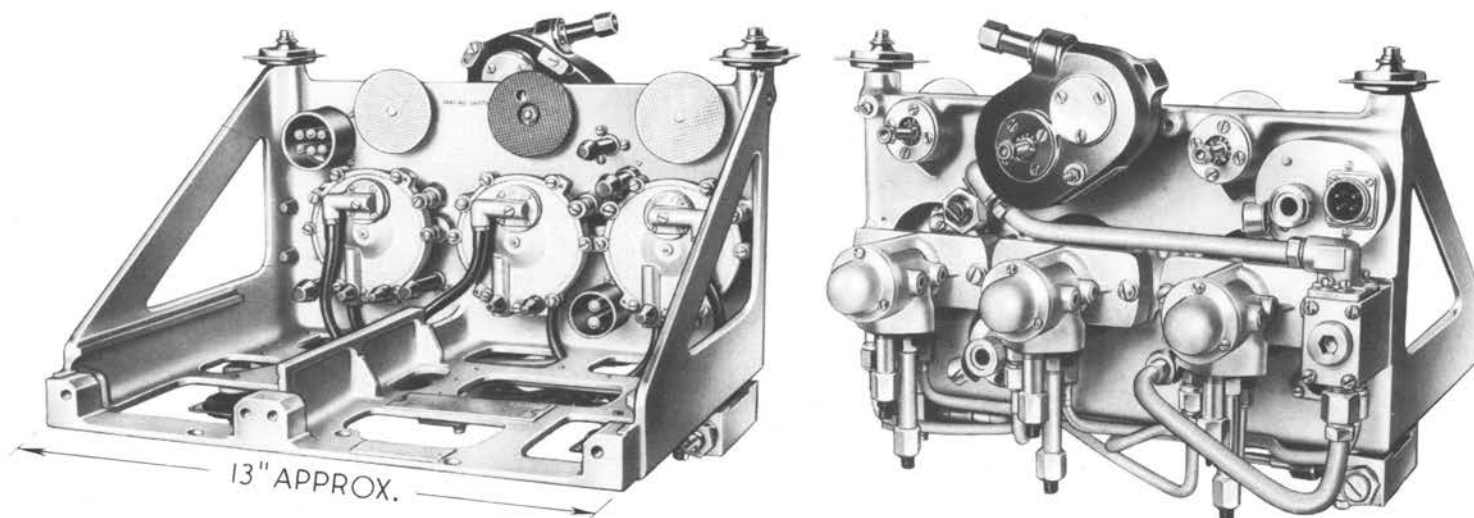
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model (X)	Remarks
Sperry Gyroscope Co., Inc.	645318	A-B-C	6000096530	05-45AB	106J/614		Illuminated by 3 volt dial lamp.
	648012	A-B-C	6000096520	05-45AB	106J/752	X	No individual illumination.



MOUNT—REMOTE CONTROL GYRO CONTROL

A. E. REFERENCE NUMBER 60-8254

NAMES: Remote control gyro control mount
Mount assembly—directional gyro control

Mounting unit—remote control

DESCRIPTION: The remote control gyro control mount, a part of the Army type A-3 automatic pilot, is attached to the structure of the airplane to support the vertical and the directional gyro controls. It is used, primarily, when remote control of turns is required.

This mount consists of a shock mounted frame to which are attached the air relays, balanced oil valves, follow-up pulleys, pressure and drain manifolds. The air intake connections for the two control units are fitted to the suction manifold, permitting the entire system to be connected through a central air filter. The remote control adapter is fastened to the aileron follow-up pulley, and is connected to the turn controller which is mounted in the pilot's compartment.

All air, mechanical and electrical connections are made automatically when the gyro controls are slid onto the frame tracks and locked in position.

CHARACTERISTICS:

Dimensions.....	approximately 13 by 8 $\frac{9}{16}$ by 14 $\frac{15}{16}$ inches
Weight.....	approximately 12 $\frac{1}{4}$ pounds

ARMY

A. E. REFERENCE NUMBER: 60-8254

SPECIFICATIONS:

General.....	94-27977-B
Detail.....	94-27980
Superseded.....	27980

MANUFACTURER: Sperry Gyroscope Co., Inc.

MANUFACTURER'S DRAWING NUMBER: 644707

A. S. C. STOCK NUMBER: 6000298650

TECHNICAL ORDER NUMBER: 05-45AB

PRODUCTION STATUS: Under procurement.

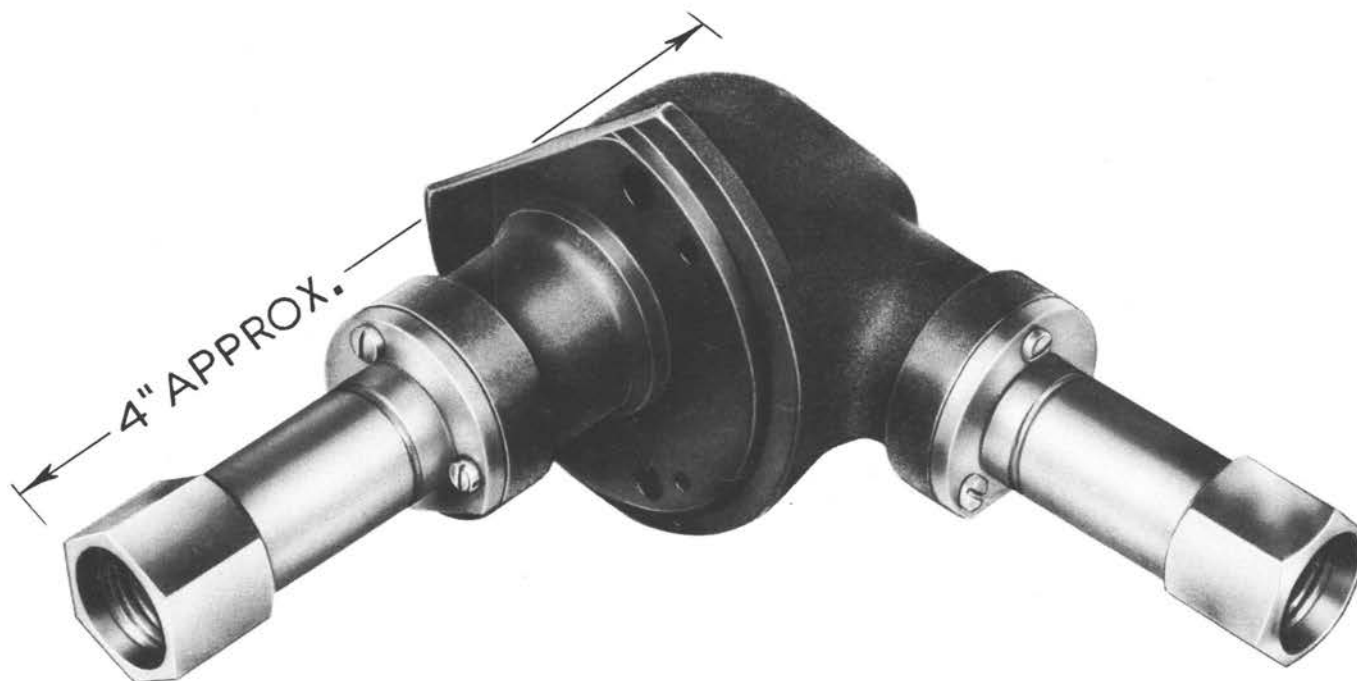
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106J/616



GEAR — FLEXIBLE SHAFT ANGLE

A. E. REFERENCE NUMBER 60-8251

NAMES: Flexible shaft angle gear

Gear box assembly

DESCRIPTION: The flexible shaft angle gear, also known as the gear-box, is a part of the Army type A-3 or A-3A automatic pilots. It is used for remote control operation of the automatic pilot, and is mounted in the cable assembly between the remote turn controller and the aileron adapter attached to the mount.

It contains two 45-degree angle gears. Two ratios being available, the 25:42 ratio is used at speeds of 220 to 250 miles per hour, and the 25:48 ratio is used with air speeds of 250 to 280 miles per hour.

CHARACTERISTICS:

Dimensions.....	approximately $3\frac{5}{8}$ by $2\frac{1}{8}$ by 4 inches.
Weight.....	approximately $1\frac{1}{3}$ pounds
Gear ratios.....	25:42 ratio for 220 to 250 miles per hour, and 25:48 ratio at 250 to 280 miles per hour, true air speed.

ARMY

A. E. REFERENCE NUMBER: 60-8251

SPECIFICATIONS: General.....94-27977-B

MANUFACTURER: Sperry Gyroscope Co.

MANUFACTURER'S DRAWING NUMBER: 645996

A. S. C. STOCK NUMBER: 6300643689-6

TECHNICAL ORDER NUMBER: 05-45AB

PRODUCTION STATUS: Under procurement.

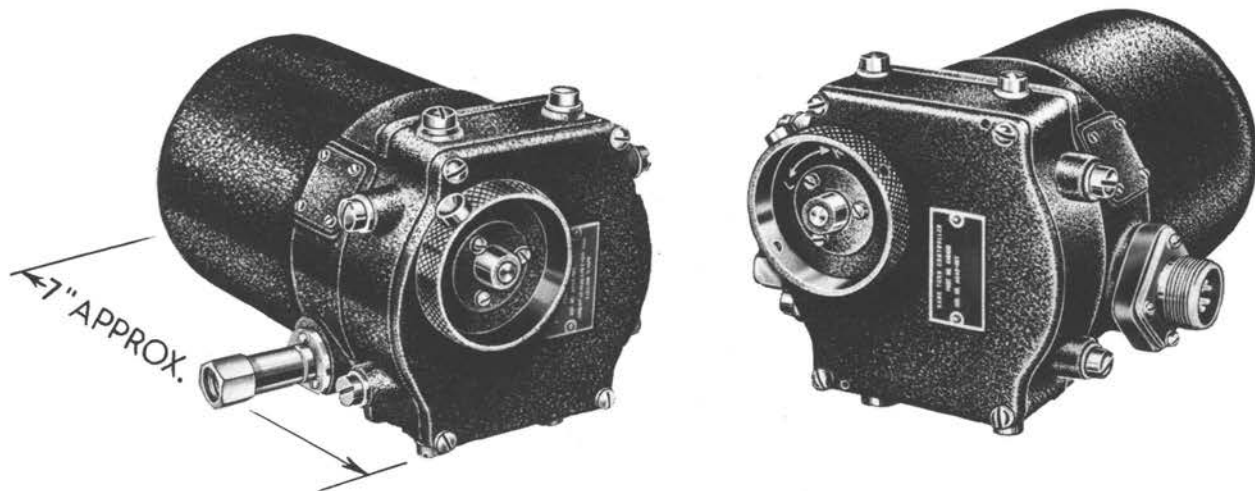
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 109/20



CONTROLLER — BANKED TURN

A. E. REFERENCE NUMBER 60-8253

NAMES: Banked turn controller
Turn controller

Bank and turn controller
Bank-turn controller

DESCRIPTION: The banked turn control, part of the Army type A-3 automatic pilot, is mounted in the pilot's compartment. It is connected to the vertical gyro control by an electric cable, and to the differential adapter attached to the remote control gyro control mount by a flexible cable.

An electric turn motor in the directional gyro and the aileron pick-offs in the vertical gyro are actuated through use of the turn control, permitting properly banked turns to be made by the automatic pilot.

CHARACTERISTICS:

Markings.....	fluorescent-radioactive
Dimensions.....	approximately 6½ by 4¾ by 7 inches
Weight.....	approximately 2½ pounds

ARMY

A. E. REFERENCE NUMBER: 60-8253

SPECIFICATIONS:

General.....94-27977-B

MANUFACTURER: Sperry Gyroscope, Incorporated.

MANUFACTURER'S DRAWING NUMBER: 646400

A. S. C. STOCK NUMBER: 6000099685

TECHNICAL ORDER NUMBER: 05-45AB

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

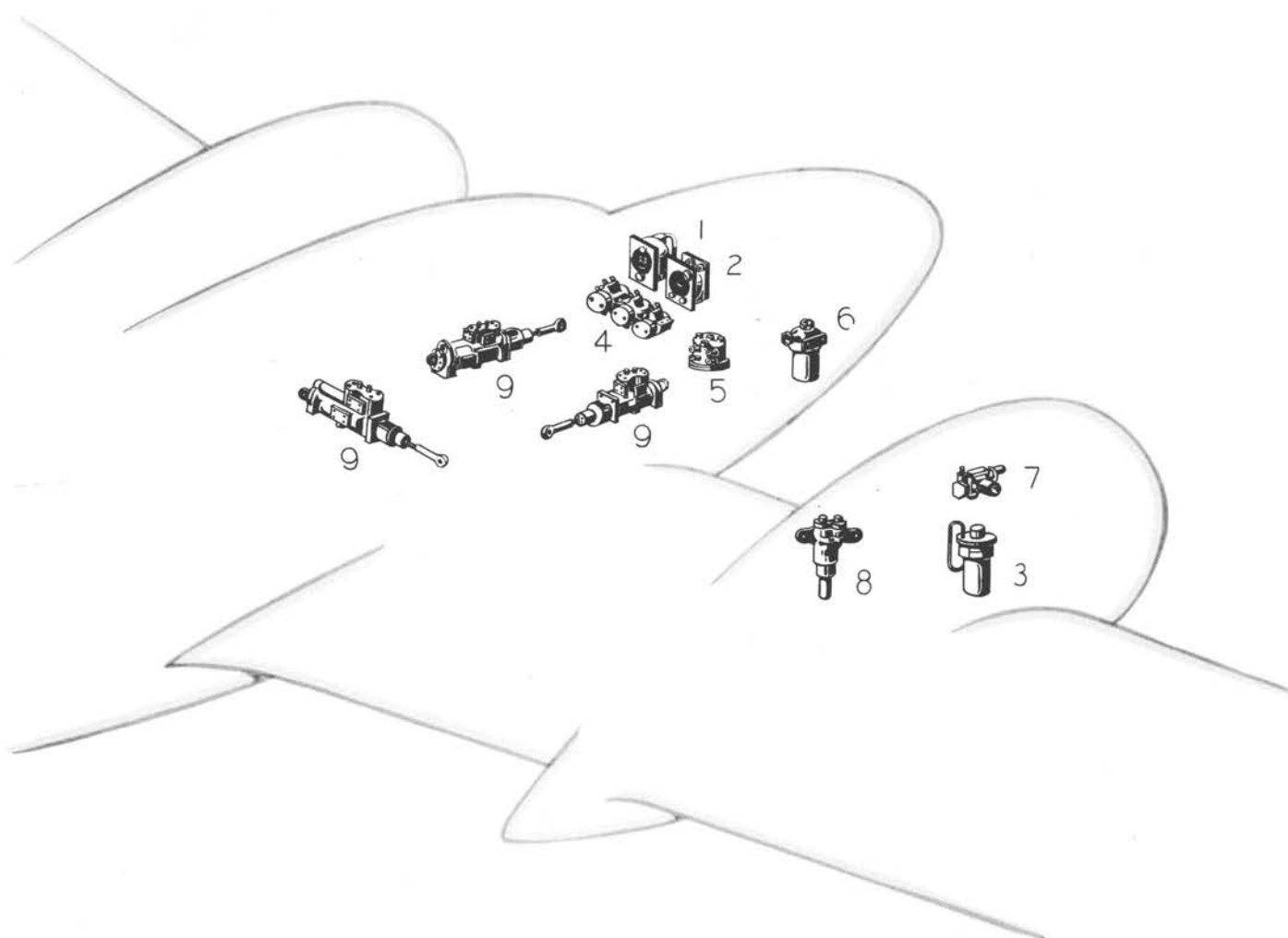
There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106J/634



AUTOMATIC PILOTS INSTRUMENTS—FLIGHT



AUTOMATIC PILOT

ARMY TYPE A-4 AND NAVY MARK 4

SPERRY OUTLINE DRAWING 644367

COMPONENT ITEMS

ITEM	NOMENCLATURE	A. E. REFERENCE NUMBER	F. S. S. C. NUMBER	REMARKS
1	Directional Gyro Control	60-8325	88-U-170	
2	Vertical Gyro Control	60-8326	88-U-200	
3	Oil Sump	None	88-T-370	
4	Transfer Valve	60-8327	88-V-550	
5	Drain Oil Trap	60-8328	88-T-2800	
6	Air Filter	60-8303	88-F-1035	
7	Oil Pressure Regulator	60-8206	88-R-245	
8	Oil Filter	60-8204	88-F-1060	
9	Push Pull 6" Stroke Servo	60-8329	88-S-260	
	Mounting Brackets: Corner	60-8330	None	} 6 Used when gyros are mounted together 8 Used when gyros are mounted separately
	Corner	60-8331	None	
	Top Center	60-8332	None	
	Bottom Center	60-8333	None	

NOTE: Army contracts: All Items Government Furnished
Navy contracts: All Items Government Furnished



6 $\frac{22}{32}$ "
APPROX.

CONTROL—DIRECTIONAL GYRO

A. E. REFERENCE NUMBER 60-8325

F. S. S. C. NUMBER 88-U-170

NAMES: Directional gyro control
Azimuth gyro

Directional unit
Directional—air

DESCRIPTION: The directional gyro control, a part of the Army type A-4 and Navy Mark 4, automatic pilot, contains the gyroscope which supplies the directional reference for both manual and automatic rudder control of the airplane. It also contains the air pick-offs and caging mechanism. Setting the directional card and caging the gyroscope are accomplished through the use of the caging knob and mechanism. Caging prevents damage to the instrument during maneuvers which exceed its operating range.

Two circular cards, graduated in 360 degrees of azimuth, are visible in the dial face.

The lower, or directional, card may be set to any desired heading by pushing in on the caging knob and turning.

The upper, or reference, card may be set by rotating the course setting knob, which is located above the dial.

To facilitate reading the amount of course change, a small dial, graduated in degrees, is provided. One revolution of this dial represents 10 degrees of course change.

This unit also contains a rate gyro, operating a pick-off, to originate a signal proportional to the rate of turn and to prevent overshooting the course selected.

CHARACTERISTICS:

Dimensions.....	approximately 6 $\frac{22}{32}$ " by 4 $\frac{17}{32}$ " by 8 $\frac{11}{16}$ " inches
Weight.....	approximately 9 pounds
Dial markings.....	fluorescent radioactive
Power.....	4 inches mercury vacuum

ARMY

A. E. REFERENCE NUMBER: 60-8325

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement (from Navy).

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: BUREAU OF AERONAUTICS: SE-8A

F. S. S. C. STOCK NUMBER: 88-U-170 (Formerly 88-U-810)

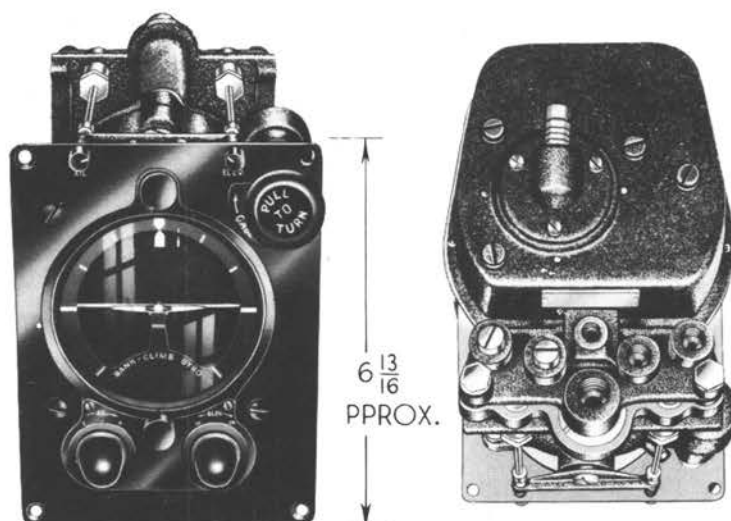
PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A—Army, N—Navy, B—British, C—Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Current Model (X)	Remarks
Sperry Gyroscope Co., Inc.	643902	643902; out-line 166418	A-N-C	6000095570	05-45AC		Illuminated dial; bank indicator.
	648046	648046	A-N-C	6000096558	05-45AC	X	
Electric Auto-Lite	643902	643902; out-line 166418	A-N	6000095570			Illuminated dial; bank indicator.
	648046	648046	A-N	6000096558		X	
War Products Division of Eversharp, Inc.	648046	648046	A-N	6000096558		X	



AUTOMATIC PILOTS INSTRUMENTS—FLIGHT



CONTROL—VERTICAL GYRO

A. E. REFERENCE NUMBER 60-8326

F. S. S. C. NUMBER 88-U-200

NAMES: Vertical gyro control
Bank and climb gyro control

Bank and climb control unit (Navy)
Horizon—air

DESCRIPTION: The vertical gyro control, a part of the Army type A-4 and Navy Mark 4 automatic pilot, contains the gyroscope which supplies the reference for both manual and automatic control of the aileron and elevator surfaces of the airplane. It also contains the air pick-offs and anticipators for these controls and a caging device and mechanism for manually operating the air pick-offs. The caging device makes it possible to lock the gyro, thereby preventing damage to the instrument during maneuvers in excess of its operating range.

Manual operation of the air pick-offs is accomplished by rotation of the aileron and elevator trim knobs. The numbers on the graduated dials around the knobs give visual indication of the relative position of the pick-offs.

Two small knobs at the top of the instrument marked "AIL" and "ELEV" permit the pilot to adjust the strength of signals for these two controls.

Indication of the degree of bank is given by a banking indicator on the front of the instrument.

The horizon bar in front of the dial moves with relation to a miniature airplane to give the pilot an indication of flight attitude; the miniature airplane can be raised or lowered to compensate for load conditions.

CHARACTERISTICS:

Dimensions.....approximately 6 $\frac{13}{16}$ by 5 $\frac{1}{16}$ by 8 $\frac{13}{16}$ inches
Weight.....approximately 8 pounds
Dial markings.....Fluorescent radioactive
Power.....4 inches mercury vacuum

ARMY

A. E. REFERENCE NUMBER: 60-8326

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-45AC

PRODUCTION STATUS: Under procurement (from Navy)

SHIPPING DATA: Shipped as a complete unit

NAVY

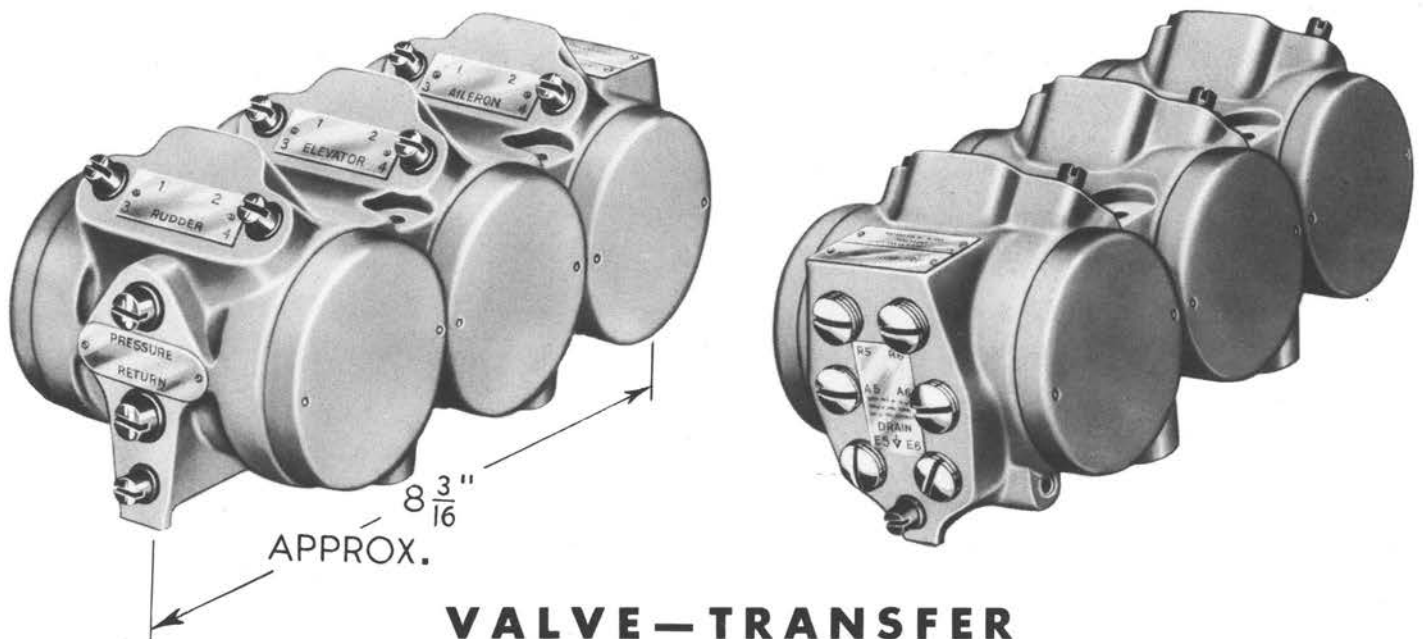
SPECIFICATIONS: BuAer.: SE-8A

F. S. S. C. STOCK NUMBER: 88-U-200 (formerly 88-U-925)

PROCUREMENT STATUS: Standard G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Current Model (X)
Sperry Gyroscope Co., Inc.	643580	643580 Outline 166312	A-N-C	6000093950	05-45AC	
Electric Auto-Lite Co.	648045	648045	A-N	6000094475		X
War Products Division of Eversharp, Inc.	648045	648045	A-N	6000094475		X



VALVE—TRANSFER

A. E. REFERENCE NUMBER 60-8327

F. S. S. C. NUMBER 88-V-550

NAMES: Transfer valve

Valve—Transfer automatic pilot air hydraulic

DESCRIPTION: The transfer valve, a part of the Army type A-4 and Navy Mark 4 automatic pilots, contains the three sets of diaphragms, valves, and connections for transforming air signals which originate in the gyro controls into amplified oil pressure impulses capable of operating the servos which actuate the ailerons, rudder, and elevator of the airplane.

Oil is supplied to the transfer valves, under pressure, by an engine driven oil pump.

Air signals from the control gyros cause the valve to move from its center, or no signal position, and to open one oil line to pressure and the other to the oil return. The oil lines are connected to opposite ends of the servo cylinder, and cause the piston to move in one direction or the other, depending upon the signal, and to move the control surfaces accordingly. The three valves operate independently, as above, though they are contained in one casting.

CHARACTERISTICS:

Dimensions.....	approximately 3 $\frac{3}{4}$ by 3 $\frac{1}{16}$ by 8 $\frac{3}{16}$ inches
Weight.....	approximately 5 $\frac{1}{8}$ pounds

ARMY

A. E. REFERENCE NUMBER: 60-8327

A. S. C. STOCK NUMBER: 6000469150

TECHNICAL ORDER NUMBER: 05-45AC

MANUFACTURER: Sperry Gyroscope Co., Inc.

MANUFACTURER'S PART AND DRAWING NUMBERS: 644230; Outline Dwg.—76608

PRODUCTION STATUS: Under procurement (from Navy).

SHIPPING DATA: Shipped as a complete unit.

NAVY

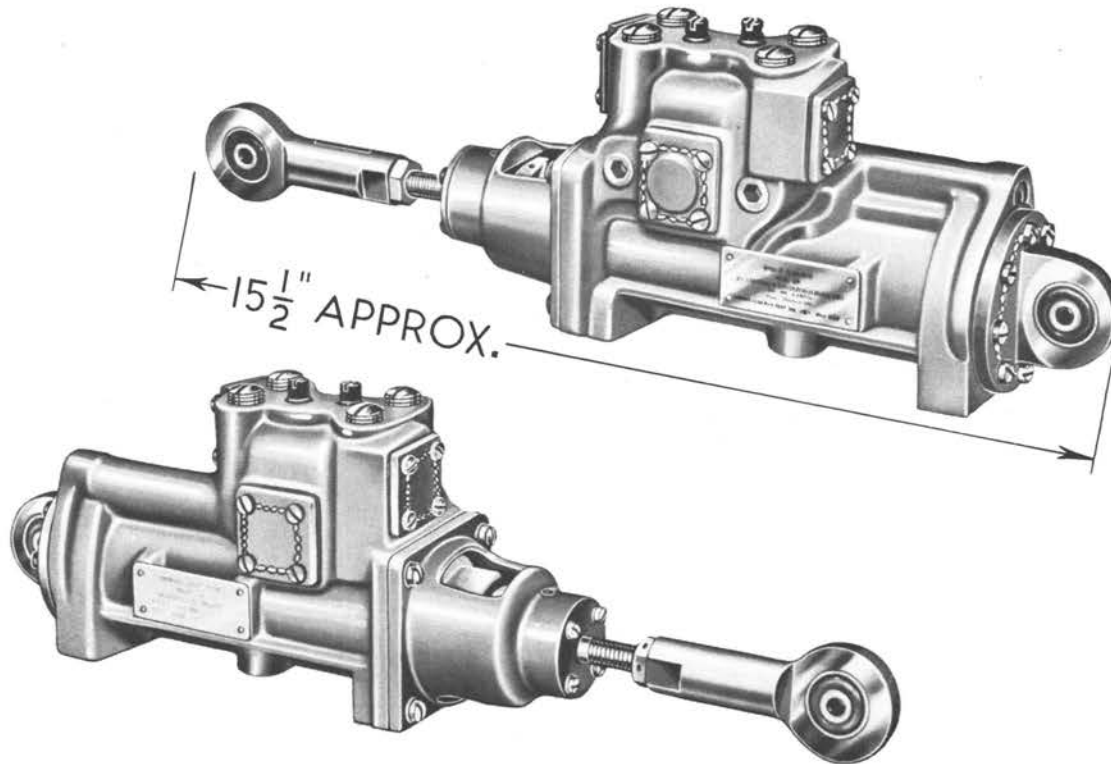
BUREAU OF AERONAUTICS: SE-8A

F. S. S. C. STOCK NUMBER: 88-V-550

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.



AUTOMATIC PILOTS INSTRUMENTS—FLIGHT



SERVO—6 INCH STROKE PUSH-PULL

A. E. REFERENCE NUMBER 60-8329 F. S. S. C. NUMBER 88-S-260

NAMES: 6 inch stroke, push-pull servo
Hydraulic surface control
Control assembly

6 inch individual push-pull type servo
Servo—automatic pilot, push-pull
type individual (6 inch)

DESCRIPTION: This servo unit, a part of the Army type A-4 and Navy Mark 4 automatic pilots, provides the actual power for changing the position of the control surfaces of the airplane. Three individual units are used for each installation, one each for the ailerons, rudder, and elevator.

Each unit consists of a cylinder, piston, by-pass valve, and an over-powering valve which permits the human pilot to over-power the automatic pilot, if necessary, by applying additional force to the manual controls of the airplane.

When the control surface of the airplane is in a neutral position, the piston is approximately in the center of the cylinder. Oil under pressure is supplied through the proper channel of the transfer valve to one end of the servo cylinder, depending upon the signal originating in the control gyro, while the oil in the opposite end of the cylinder is returned to the transfer valve. The pressure difference causes the piston to move and adjust the control surface accordingly.

Pressure of the oil in the cylinders may be relieved by the by-pass valve, thus permitting manual movement of the controls without opposition from the servo when the automatic pilot is disengaged.

CHARACTERISTICS: Refer to chart.

ARMY

A. E. REFERENCE NUMBER: 60-8329

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement (from Navy).

SHIPPING DATA: Shipped as a complete unit.

NAVY

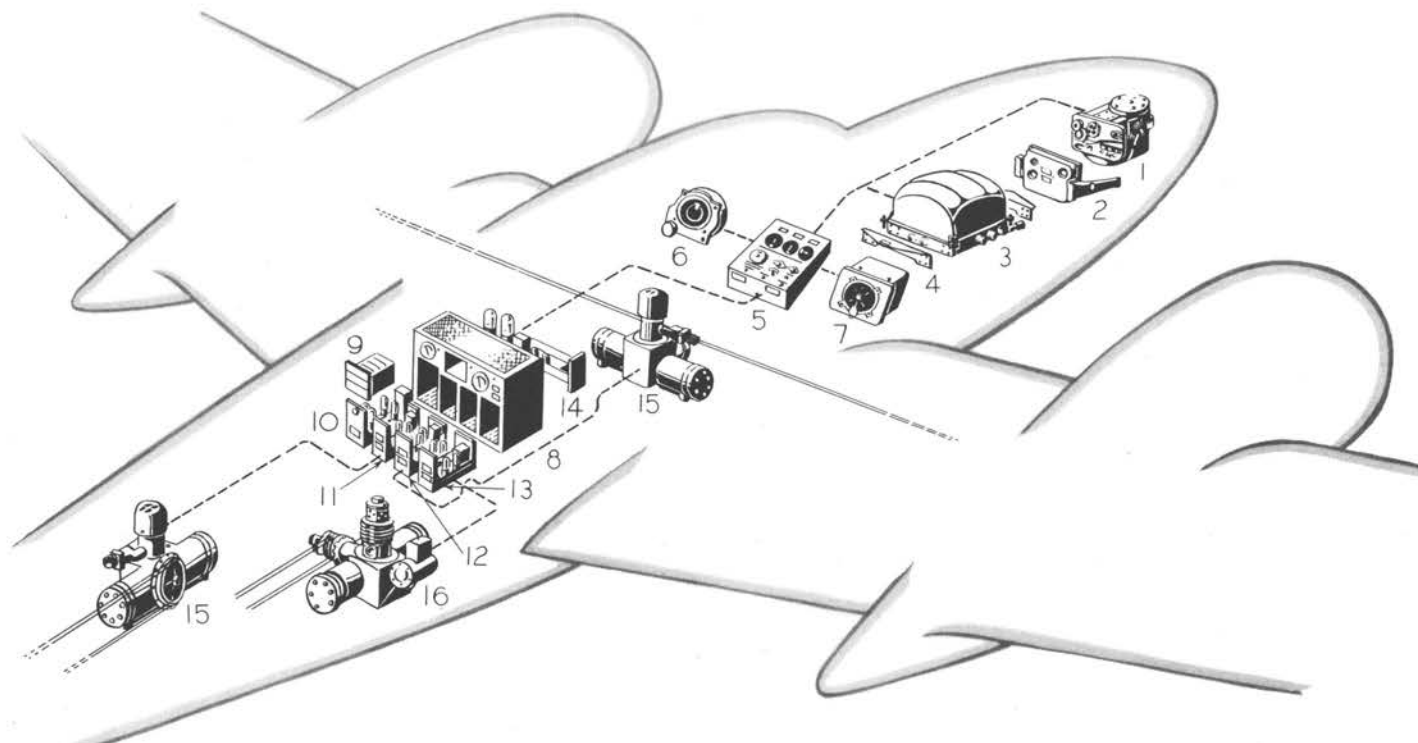
SPECIFICATIONS: Bureau of Aeronautics: SE-8A

F. S. S. C. STOCK NUMBER: 88-S-260

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 6
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Dimensions (Inches)	Weight (Pounds)	Used By	Air Service Command Stock Number	Army Technical Order Number
Sperry Gyroscope Co.	644180	644180 Outline 76577	Approximately $4\frac{1}{8} \times 2\frac{11}{16} \times 15\frac{1}{2}$	Approximately $4\frac{1}{2}$	A-N	6000096580	05-45AC
General Electric Co.	GE8254205-G1		Approximately $4\frac{1}{8} \times 2\frac{11}{16} \times 15\frac{1}{2}$	Approximately $4\frac{1}{2}$	N		



AUTOMATIC PILOT

COMPONENT ITEMS

ARMY TYPE A-5 AUTOMATIC PILOT (All Items Government Furnished)

ITEM	NOMENCLATURE	A. E. REFERENCE No.	REMARKS	
1	Directional Gyro Control	60-8406		
2	Directional Gyro Control Mount	60-8411		
3	Vertical Gyro Control	60-8405		
4	Vertical Gyro Control Mount	60-8412		
5	Control Panel	60-8413		
6	Pilot Director Indicator	60-8410		
7	Turn Controller	60-8419		
8	Amplifier Rack	60-8414		
9	Constant Altitude Control	60-8407		
10	Directional Gyro Follow-up Amplifier	60-8401		
11	Rudder Servo Amplifier	60-8350		
12	Aileron Servo Amplifier	60-8403		
13	Elevator Servo Amplifier	60-8404		
14	Constant Altitude Control Amplifier	60-8402		
15	Aileron or Rudder Servo	0.1 H.P. 4 Inch Drum	60-8418	} Two used on an installation
		0.1 H.P. 6 Inch Drum	60-8420	
		0.2 H.P. 4 Inch Drum	None	
		0.2 H.P. 6 Inch Drum	60-8416	
16	Elevator Servo	0.1 H.P. 4 Inch Drum	60-8417	} One used on an installation
		0.1 H.P. 6 Inch Drum	60-8421	
		0.2 H.P. 4 Inch Drum	60-8415	
		0.2 H.P. 6 Inch Drum	None	
	Trim Tab Servo (Not Illustrated)	60-8408	Use Discontinued	
	Navigator's Turn Controller (Not Illustrated)	60-8409	Use Discontinued	

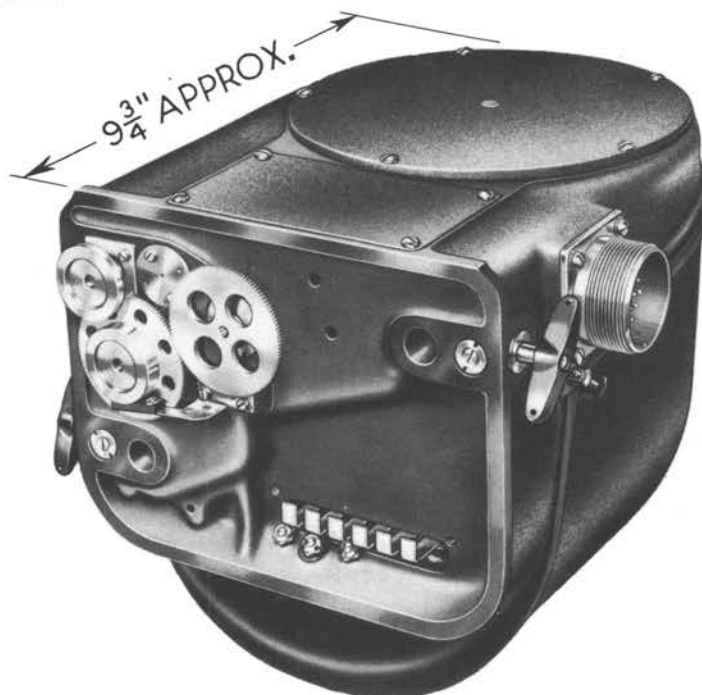
SUBSTITUTE ITEMS

Directional Gyro Control	60-8422	*May be used in place of Item 1
Directional Gyro Follow-up Amplifier	60-8423	*May be used in place of Item 10
Aileron Servo 0.2 H.P. Motor 6 Inch Drum	60-8424	(For Aileron operation only. Limited to specific installation)

*These two units must be used together.



AUTOMATIC PILOT INSTRUMENTS—FLIGHT



CONTROL—DIRECTIONAL GYRO

A. E. REFERENCE NUMBER 60-8406

NAMES: Directional gyro control
Azimuth gyro

Directional type control unit

DESCRIPTION: The directional gyro originates the electrical signal which controls the airplane's forward direction. This signal emanates from a gyroscope, which is driven by an electric motor. The angle of the airplane's deviation from the horizontal axis of the gyroscope furnishes the basic reference which determines its forward direction of flight.

The directional gyro control assembly consists principally of a gyroscope and driving motor with its housing, a follow-up motor, and a signal generator.

The gyroscope is suspended in a frame which allows freedom in all directions, and which is so arranged that when the airplane's direction changes, the difference between the position of this frame and an outer frame, which is rigidly mounted to the airplane, is translated into an electrical impulse by a magnetic pick-off.

The impulse is led from the pick-off to a follow-up amplifier, and the strengthened signal is returned to operate the follow-up motor. The follow-up motor causes the signal generator to send a signal to the servo amplifier, where it is amplified and used to operate the rudder servo valves. The servo then moves the airplane's rudder to bring the airplane to its prescribed course.

The follow-up system and a leveling magnet cause the gyro control to reset itself automatically after a correction to the airplane direction has been made.

CHARACTERISTICS:

Dimensions.....approximately 8½ by 8 by 9¾ inches
Weight.....approximately 14½ pounds
Power.....alternating current 115 volt 3 phase 400 cycles

RELATIONSHIP OF PARTS: Used with Army type A-5 automatic pilot.

ARMY

A. E. REFERENCE NUMBER: 60-8406

SPECIFICATIONS:

General.....27329
Detail.....27358

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

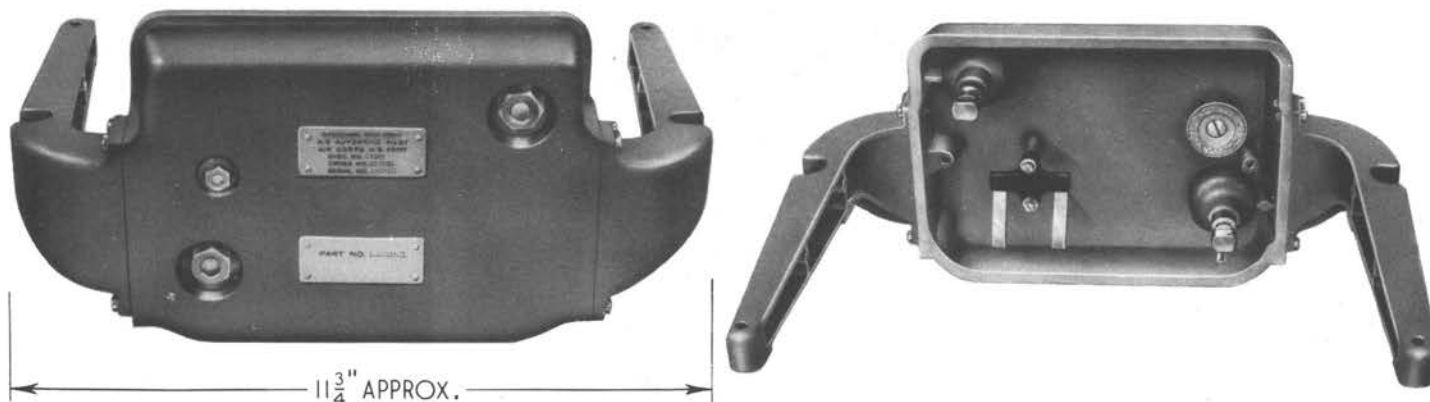
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644842 Outline 647323	A-B	6000096560	05-45AD	106J/682
Electric Auto-Lite Company	644842 Outline 647323	A-B	6000096560	05-45AD	106J/682
A. C. Spark Plug Division	644842 Outline 647323	A-B	6000096560	05-45AD	106J/682



MOUNT—DIRECTIONAL GYRO CONTROL

A. E. REFERENCE NUMBER 60-8411

NAMES: Directional gyro control mount

Azimuth gyro mount

DESCRIPTION: The directional gyro mount is part of the Army type A-5 automatic pilot.

The mount consists of a "U" shaped bracket which cradles the directional gyro control. The control is attached to the mount by four screws close to the base of the instrument. The mount itself is attached to the airplane structure by four bolts, one at each end of the bracket and two near the center.

CHARACTERISTICS:

Dimensions approximately 11 $\frac{3}{4}$ by 5 $\frac{3}{4}$ by 8 inches
Weight approximately 3 $\frac{1}{2}$ pounds

ARMY

A. E. REFERENCE NUMBER: 60-8411

SPECIFICATIONS:

General 27329
Detail 27358 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

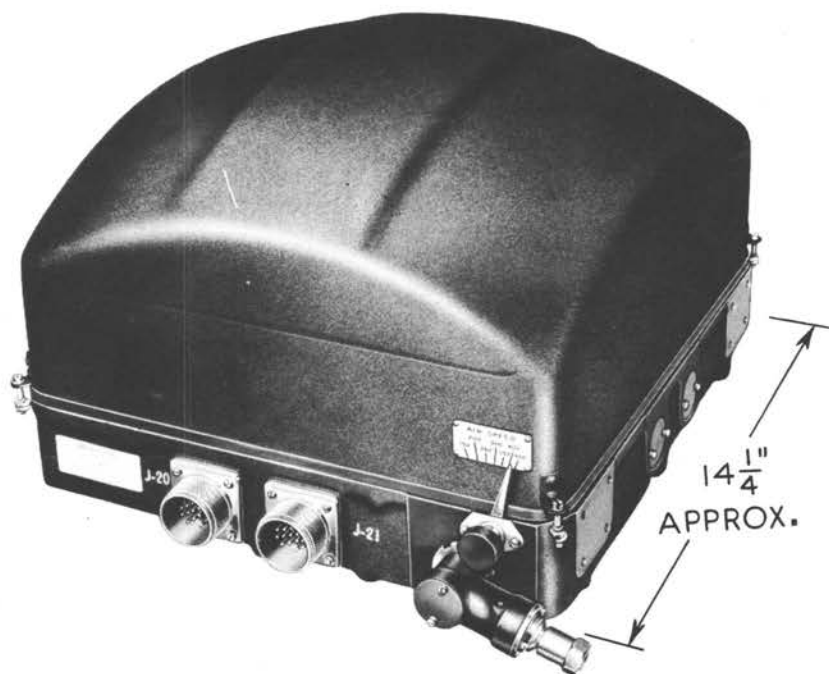
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co. Inc.	645263 Outline 647323	A-B	6000298740	05-45AD	106J/683
Electric Auto Lite Company	645263 Outline 647323	A-B	6000298740	05-45AD	106J/683
A. C. Spark Plug Division	645263 Outline 647323	A-B	6000298740	05-45AD	106J/683



AUTOMATIC PILOT INSTRUMENTS—NAVIGATION



CONTROL—VERTICAL GYRO

A. E. REFERENCE NUMBER 60-8405

NAMES: Vertical gyro control

Vertical type control unit

Bank and climb gyro control

DESCRIPTION: The vertical gyro control originates the electrical signals by which the airplane's attitude is controlled in roll and pitch.

The vertical gyro control is dependent on the use of a gyroscope, which spins about a vertical axis, for its operation. The gyroscope, which is driven by an integral electric motor, furnishes the basic reference from which to determine changes in the airplane's attitude.

The vertical gyro control assembly consists, principally, of a gyroscope and an electric driving motor with its frame, erection torque motors, and follow-up amplifiers.

The gyroscope is suspended in a frame which allows freedom in all directions, and which is so arranged that when the airplane attitude changes, the difference between the position of the normally stable gyroscope and an outer frame, which is rigidly mounted to the airplane, is translated into electrical impulses or signals by magnetic pick-offs.

The impulse from one set of pick-offs is led to the servo amplifier, and the amplified signal is used to operate the servo valves. Control of pitch is effected through the elevator servo, and control of roll through the aileron servo.

Signals from another set of pick-offs are sent to the integral amplifiers, which close relays to operate torque motors. The erection torque motors cause the vertical gyro control to automatically reset itself after the correction to the airplane attitude has been made.

CHARACTERISTICS:

Dimensions.....approximately 12 by 9 by 14 1/4 inches

Weight.....approximately 29 pounds

Power.....alternating current 115 volts 3 phase 400 cycle

RELATIONSHIP OF PARTS: Used with Army type A-5 automatic pilot.

ARMY

A. E. REFERENCE NUMBER: 60-8405

SPECIFICATIONS:

General.....27329

Detail.....27359

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

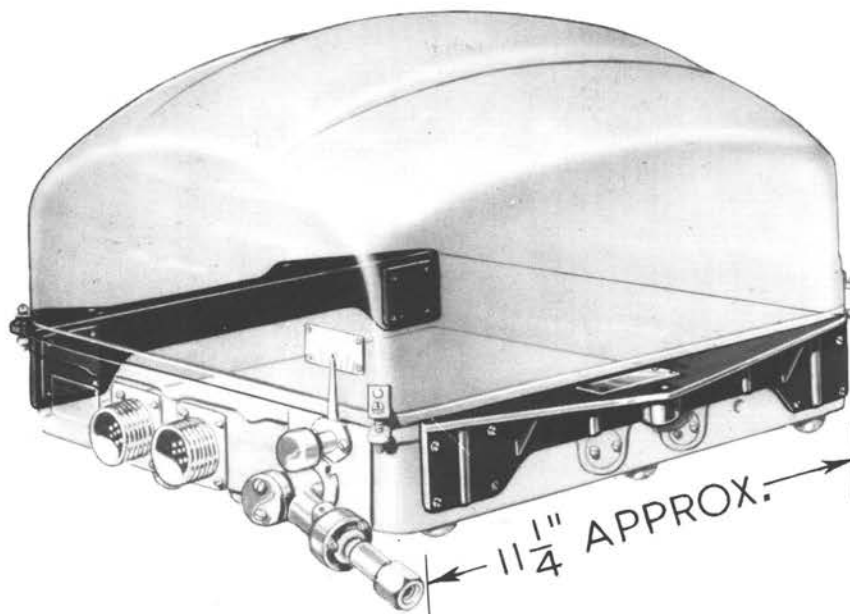
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644841	A-B	6000094920	05-45AD	106J/679
	Outline 647322				
Electric Auto-Lite Company	644841	A-B	6000094920	05-45AD	106J/679
	Outline 647322				
A. C. Spark Plug Division	644841	A-B	6000094920	05-45AD	106J/679
	Outline 647322				



MOUNT—VERTICAL GYRO CONTROL

A. E. REFERENCE NUMBER 60-8412

NAMES: Vertical gyro control mount
Bank and climb gyro mount

Vertical type gyro mount

DESCRIPTION: The vertical gyro control mount is a part of the Army type A-5 automatic pilot, and provides support for the vertical gyro control.

The mount consists of two "L" shaped brackets, one for each side of the instrument, each attached to the instrument by eight screws. The brackets are fastened to the airplane by two bolts on one side and one on the other. Through the use of these brackets, vibration and flexing are minimized.

CHARACTERISTICS:

Dimensions.....approximately 1 $\frac{7}{8}$ by 1 $\frac{3}{4}$ by 11 $\frac{1}{4}$ inches
Weight.....approximately $\frac{1}{2}$ pound

ARMY

A. E. REFERENCE NUMBER: 60-8412

SPECIFICATIONS:

General.....27329
Detail.....27359 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: 2 pieces required for installation. Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	645918 Outline 647322	A-B	6000298900	05-45AD	106J/680
Electric Auto-Lite Company	645918 Outline 647322	A-B	6000298900	05-45AD	106J/680
A. C. Spark Plug Division	645918 Outline 647322	A-B	6000298900	05-45AD	106J/680

AUTOMATIC PILOT INSTRUMENTS—NAVIGATION



8 $\frac{3}{4}$ " APPROX.

PANEL—CONTROL **A. E. REFERENCE NUMBER 60-8413**

NAMES: Control panel
Control unit

Panel type control unit

DESCRIPTION: The automatic pilot control panel, part of the Army type A-5 automatic pilot, is mounted on the instrument panel, and provides the human pilot with a means of controlling and operating the automatic pilot.

Three dials at the top of the panel (one each for the rudder, aileron, and elevator controls) indicate when a signal is applied to each control, and whether or not the controls are properly adjusted. Corresponding aligning switches are located to the right of the master switch. Momentary closing of a switch displaces the proper gyroscope pick-off, and produces a new flight attitude if that shown on one of the dials indicates improper adjustment.

The station selector switch, located in the lower center of the control unit, permits the automatic pilot to control the airplane, or permits turning on the pilot director indicator and using the directional flight gyro as a reference for control by the human pilot.

The altitude control switch in the lower left center of the control panel permits the pilot to set the altitude at which he desires to fly.

Three switches located along the lower edge of the control unit are used to turn the servo units operating the elevator, rudder, and elevator trim tab OFF or ON.

The master control switch which actuates the pilot is located in the left center of the control panel. This switch is provided with four positions, one OFF and three ON.

Number 1 "ON" position of the knob controls all the direct current for the automatic pilot; when in this position, the tube filaments can be heated and the pump drive motors in the servo units can be started.

All the alternating current for the automatic pilot is controlled when the knob is in the number 2 "ON" position. When in this position, the gyro motors in the control units are started, the signal generators energized, and the leveling and erection systems put into operation.

When the knob is turned to the number 3 "ON" position, the aileron servo is turned on and the equipment made ready for the elevator and rudder servo units to be turned on.

CHARACTERISTICS:

Dimensions	approximately 8 $\frac{3}{4}$ by 7 $\frac{1}{2}$ by 5 $\frac{5}{8}$ inches
Weight	approximately 7 pounds
Illumination	none
Markings	fluorescent
Power	alternating current, 115 volts, 3 phase, 400 cycles
Power	direct current, 27 volts

ARMY

A. E. REFERENCE NUMBER: 60-8413

SPECIFICATIONS:

General	27329
Detail	27364

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart

PRODUCTION STATUS: Under procurement.

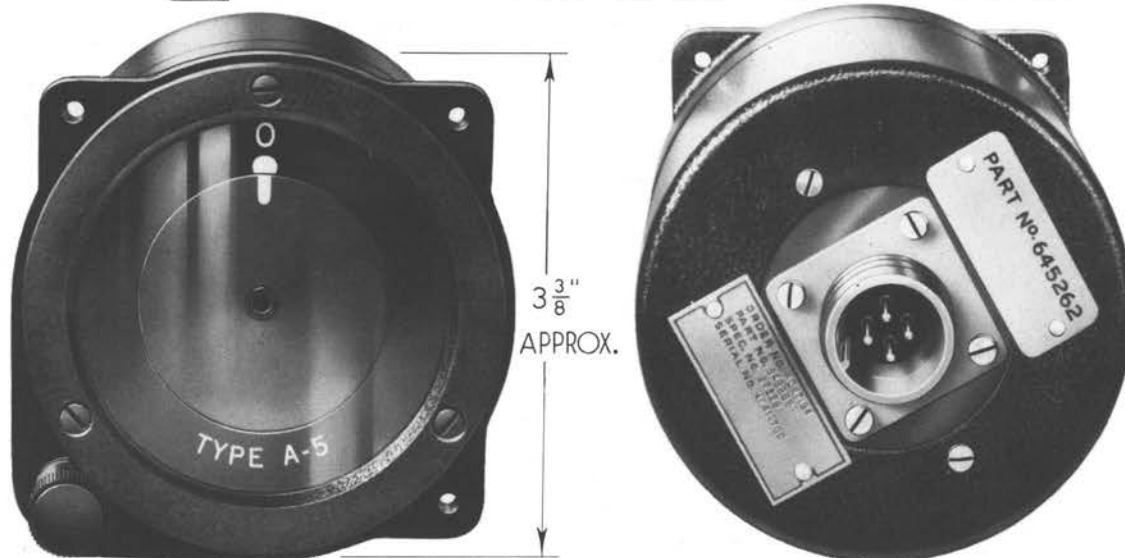
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE **Models are used in services as noted in column 3** **A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644836 Outline 77042	A-B	6000306600	05-45AD	106J/661
Electric Auto-Lite Company	644836 Outline 77042	A-B	6000306600	05-45AD	106J/661
A. C. Spark Plug Division	644836 Outline 77042	A-B	6000306600	05-45AD	106J/661



INDICATOR—PILOT DIRECTOR

A. E. REFERENCE NUMBER 60-8410

NAMES: Pilot director indicator
Pilot director

Director—pilot
P. D. I.

DESCRIPTION: The pilot director indicator of the Army type A-5 automatic pilot is mounted on the instrument panel.

The unit operates when the control panel selector switch is turned to the position marked P. D. I. (pilot director indicator) and the airplane is being flown by the human pilot. The indicator shows the pilot the direction in which to turn to maintain the pre-determined heading which has previously been set on the directional gyro control.

A knob is provided on the front of the instrument for setting the indicator to zero.

The indication on the face of the instrument is obtained through a signal generator in the instrument which is coupled electrically to a similar signal generator in the directional gyro of the automatic pilot.

CHARACTERISTICS:

Dimensions	approximately 3 $\frac{3}{8}$ by 3 $\frac{3}{8}$ by 5 inches
Weight	approximately 1 $\frac{1}{2}$ pounds
Illumination	none
Markings	fluorescent luminescent
Power	115 volts, 3 phase, 400 cycle alternating current
Range	24 degrees to one revolution of dial pointer

ARMY

A. E. REFERENCE NUMBER: 60-8410

SPECIFICATIONS:

General	27329
Detail	27365

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

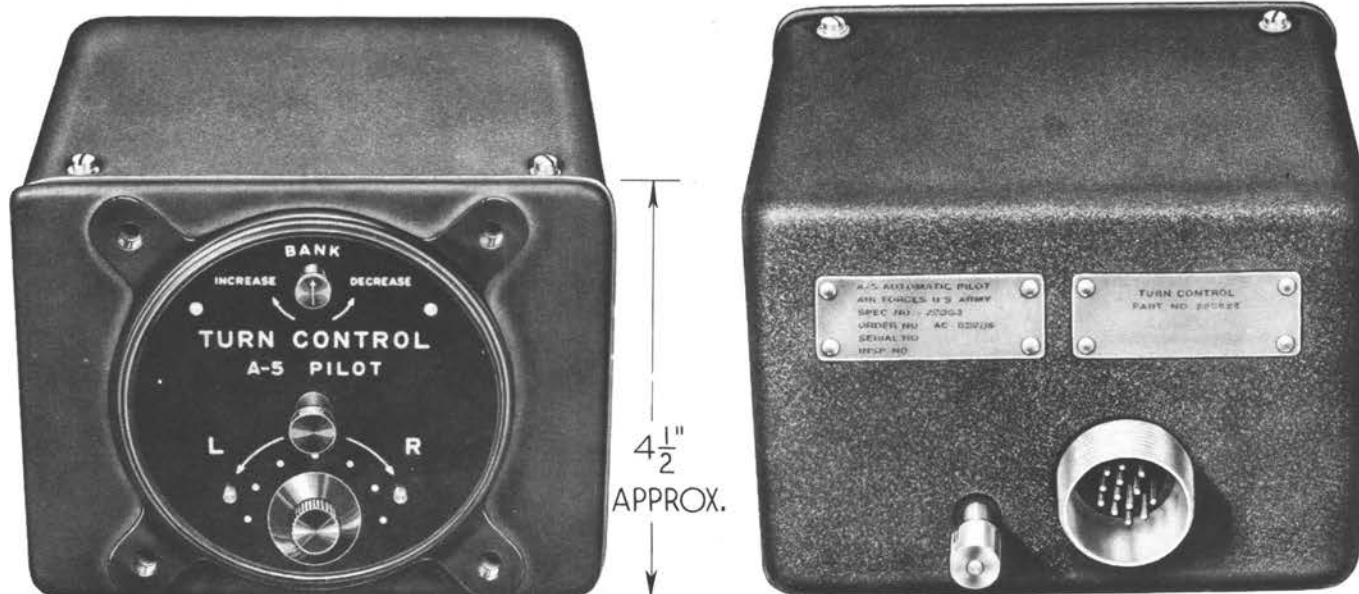
There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	654262 Outline 803135	A-B	6000225950	05-45AD	109/32
Electric Auto-Lite Co.	645262 Outline 803135	A-B	6000225950	05-45AD	109/32
A.C. Spark Plug Division	645262 Outline 803135	A-B	6000225950	05-45AD	109/32



AUTOMATIC PILOT INSTRUMENTS—FLIGHT



CONTROLLER—TURN

A. E. REFERENCE NUMBER 60-8419

NAMES: Turn controller
Banked turn control

Remote turn type control unit

DESCRIPTION: This unit, a part of the Army type A-5 automatic pilot, is mounted on the instrument panel, and permits the human pilot to make correctly banked right or left turns, up to 180 degrees per minute. It is operative only when the selector switch on the control panel is in the position marked PILOT.

CHARACTERISTICS:

Dimensions	approximately 5 $\frac{5}{8}$ by 4 $\frac{1}{2}$ by 7 $\frac{1}{16}$ inches
Weight	approximately 5 $\frac{1}{2}$ pounds
Illumination	none
Markings	fluorescent
Airspeed range	150 to 450 miles per hour
Rate of turn	180 degrees per minute, right or left

ARMY

A. E. REFERENCE NUMBER: 60-8419

SPECIFICATIONS:

General	27329
Detail	27363

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

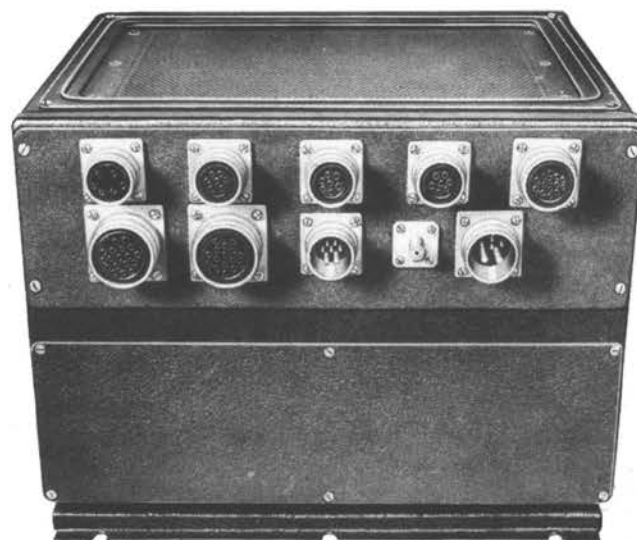
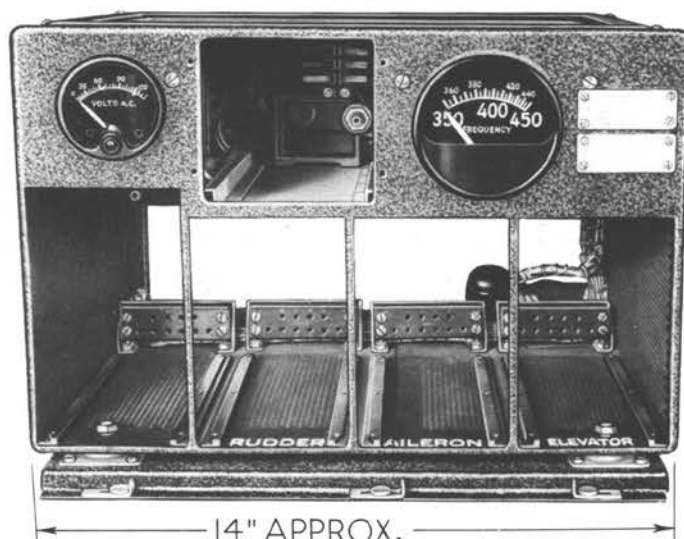
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	647409	A-B	6000098470	05-45AD	106J/755
Electric Auto-Lite Company	647409	A-B	6000098470	05-45AD	106J/755
A. C. Spark Plug Division	647409	A-B	6000098470	05-45AD	106J/755



RACK—AMPLIFIER

A. E. REFERENCE NUMBER 60-8414

NAMES: Amplifier rack

Amplifier type rack

DESCRIPTION: The amplifier rack, a part of the Army type A-5 automatic pilot, houses the azimuth follow-up amplifier, the rudder, aileron and elevator servo amplifiers, and the constant altitude control and its amplifier. With the exception of the constant altitude control amplifier, each of these units can be removed and replaced in the rack like drawers, all electrical and other connections being made or broken automatically. This type of mounting permits inspection, adjustment, and repair of the individual units while the airplane is in flight.

The voltmeter and frequency meter, which indicate the voltage and the frequency of the A. C. power source, are mounted on the face of the amplifier rack.

CHARACTERISTICS:

Dimensions.....	approximately 14 by 10½ by 12¾ inches
Weight.....	approximately 19 pounds
Illumination.....	none
Markings.....	fluorescent
Power.....	115 volt, 3 phase, 400 cycle alternating current
Range-frequency meter.....	350 to 450 cycles
Markings.....	fluorescent
Range-voltmeter.....	0 to 130 volts
Markings.....	fluorescent

ARMY

A. E. REFERENCE NUMBER: 60-8414

SPECIFICATIONS:

General.....	27329
Detail.....	27360

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

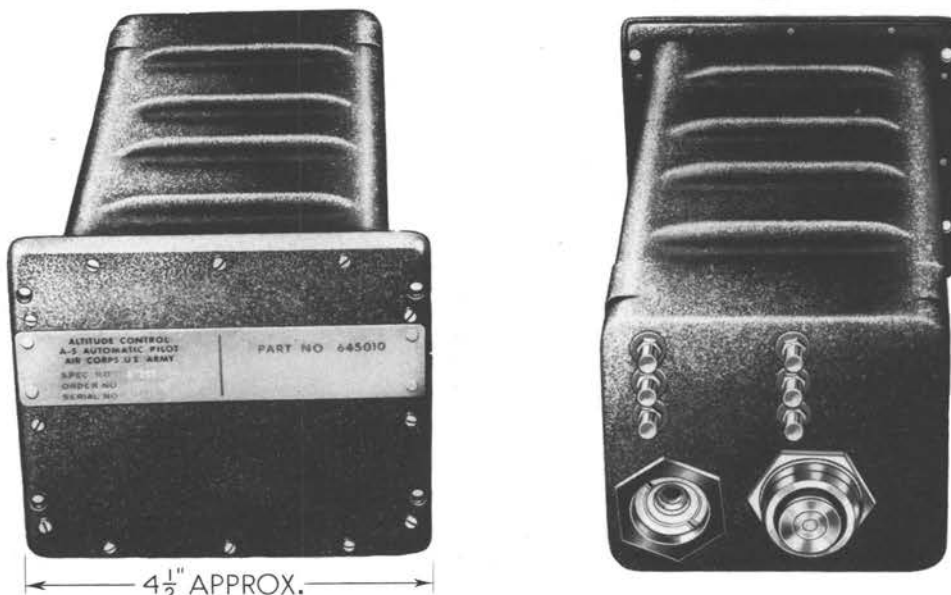
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644890 Outline 77175	A-B	6000318600	05-45AD	106J/662
Electric Auto-Lite Company	644890 Outline 77175	A-B	6000318600	05-45AD	106J/662
A. C. Spark Plug Division	644890 Outline 77175	A-B	6000318600	05-45AD	106J/662



AUTOMATIC PILOT INSTRUMENT SECTION



CONTROL—CONSTANT ALTITUDE

A. E. REFERENCE NUMBER 60-8407

NAMES: Constant altitude control
Altitude control

Altitude type control unit remote

DESCRIPTION: The constant altitude control of the Army type A-5 automatic pilot is used to maintain the airplane at a pre-set altitude. It consists of a bellows which is responsive to changes in barometric pressure, mechanical linkage and a magnetic pick-up. The motion of the bellows is transmitted through the mechanical linkage to the magnetic pick-up. The signal from the pick-up goes to the constant altitude control amplifier.

When the altitude control switch is in the ON position, the amplified signal causes the elevator servo to operate to maintain the desired altitude. When the switch is in the OFF position, the signal is returned to the constant altitude control, where it maintains the magnetic pick-up in the "zero signal" position to prevent sudden changes in altitude when the switch is turned on.

CHARACTERISTICS:

Dimensions	approximately 4½ by 3¾ by 9 inches
Weight	approximately 2½ pounds
Power	115-volt, 3-phase, 400-cycle alternating current.

ARMY

A. E. REFERENCE NUMBER: 60-8407

SPECIFICATIONS:

General	27329
Detail	27360 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

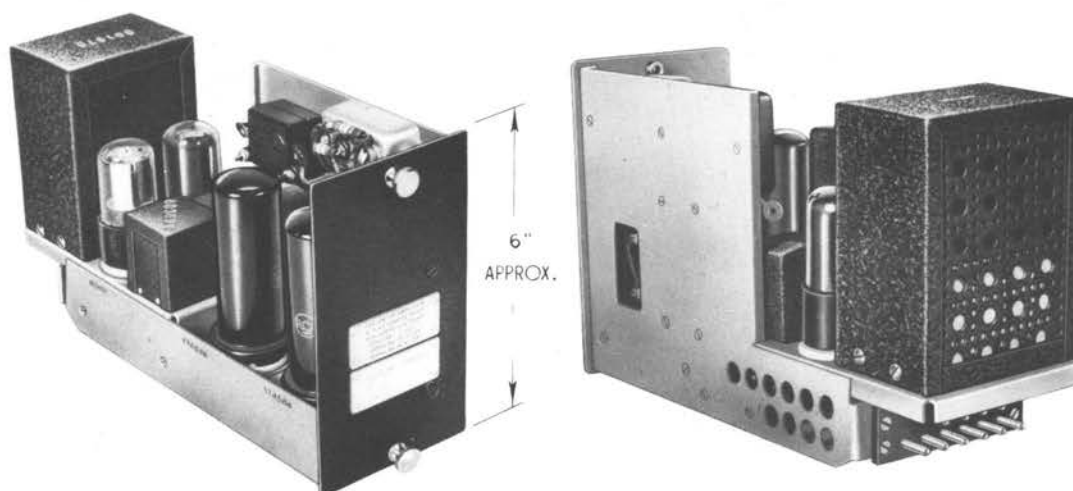
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	645010	A-B	6000096600	05-45AD	106J/667
Electric Auto-Lite Company	645010	A-B	6000096600	05-45AD	106J/667
A. C. Spark Plug Division	645010	A-B	6000096600	05-45AD	106J/667



AMPLIFIER—DIRECTIONAL GYRO FOLLOW-UP

A. E. REFERENCE NUMBER 60-8401

NAMES: Directional gyro follow-up amplifier
Azimuth follow-up amplifier

Follow-up amplifier
Azimuth follow-up type amplifier

DESCRIPTION: The directional gyro follow-up amplifier, part of the Army type A-5 automatic pilot, receives the impulse from the directional gyro and prepares it for use in the follow-up drive motor relay of the directional gyro. The chassis also carries the leveling amplifier, which receives the leveling signal from the directional gyro and amplifies it for use in a relay to energize the gyro leveling coil.

The amplifier is of the vacuum tube type. It slides into the amplifier rack, automatically making all electrical connections to the rack, and may be removed for adjustment or repair while the airplane is in flight.

CHARACTERISTICS:

Dimensions	approximately 3½ by 6 by 10 inches
Weight	approximately 6 pounds
Power	alternating current, 115-volt, 3-phase, 400-cycle

ARMY

A. E. REFERENCE NUMBER: 60-8401

SPECIFICATIONS:

General	27329
Detail	27360 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

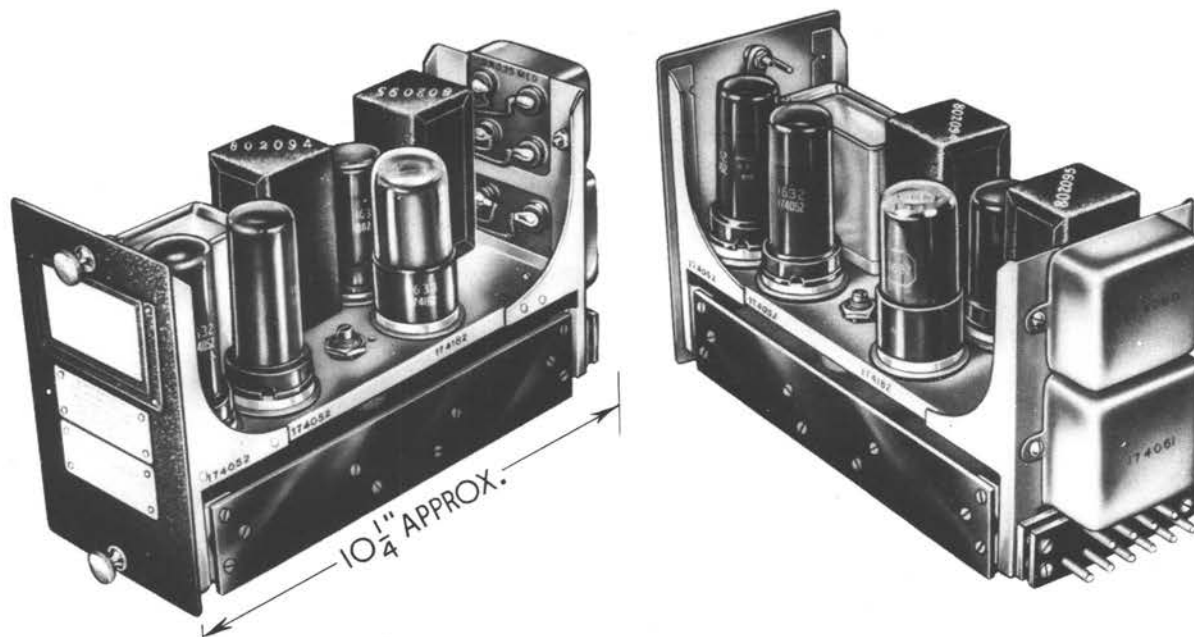
There is no Navy equivalent.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644835	A-B	6000024300	05-45AD-1	106J/664
Electric Auto-Lite Co.	644835	A-B	6000024300	05-45AD-1	106J/664
A. C. Spark Plug Division	644835	A-B	6000024300	05-45AD-1	106J/664



AUTOMATIC PILOT INSTRUMENTS—NAVIGATION



AMPLIFIER—RUDDER SERVO

A. E. REFERENCE NUMBER 60-8350

NAMES: Rudder servo amplifier
Servo amplifier

Rudder surface control amplifier

DESCRIPTION: The rudder servo amplifier is part of the amplifier rack assembly of the Army type A-5 automatic pilot.

The amplifier receives the signals from the directional gyro control. It then increases and modifies the signals, to cause the control valves in the rudder servo to operate. The rudder servo moves the rudder to correct any change in direction (motion about the vertical axis) when the airplane is under the control of the automatic pilot.

The pilot can modify the signals and make a turn to set the aircraft on a new heading by using the pilot's turn control on the control unit.

The amplifier is mounted on a drawer-like panel which slides into the amplifier rack, automatically plugging in all connections. It may be removed for adjustment or repair while the airplane is in flight.

CHARACTERISTICS:

Dimensions	approximately 3½ by 5½ by 10¼ inches
Weight	approximately 3¾ pounds
Power	alternating current, 115-volt, 3-phase, 400-cycle

ARMY

A. E. REFERENCE NUMBER: 60-8350

SPECIFICATIONS:

General	27329
Detail	27360 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

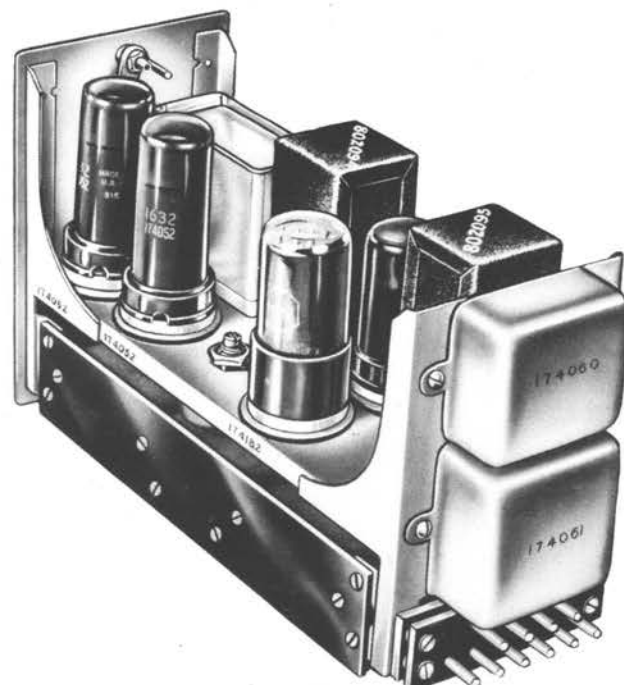
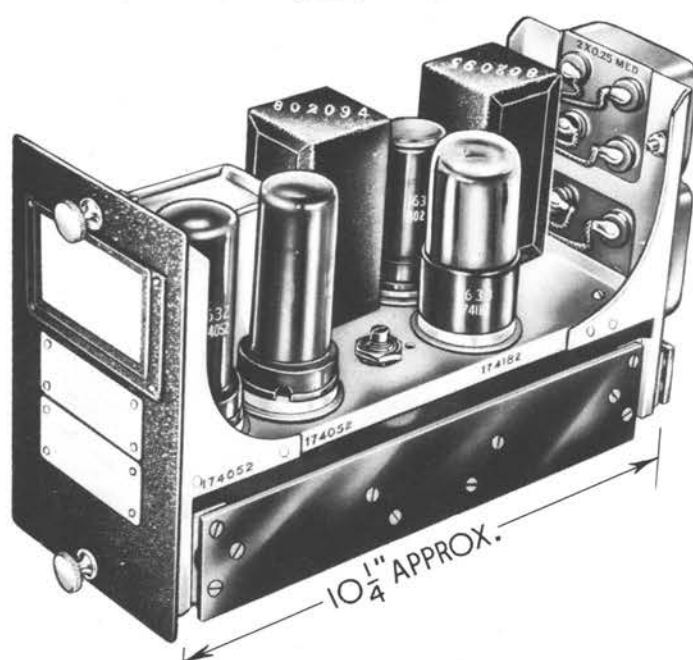
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	656044	A-B	6000024385	05-45AD	106J/754
Electric Auto-Lite Company	656044	A-B	6000024385	05-45AD	106J/754
A. C. Spark Plug Division	656044	A-B	6000024385	05-45AD	106J/754



AUTOMATIC PILOT INSTRUMENTS—NAVIGATION



AMPLIFIER—AILERON SERVO

A. E. REFERENCE NUMBER 60-8403

NAMES: Aileron servo amplifier
Servo amplifier

Aileron surface control amplifier
Servo type amplifier

DESCRIPTION: The aileron servo amplifier is part of the amplifier rack assembly of the Army type A-5 automatic pilot. The amplifier receives signals from the vertical gyro control. It then increases and modifies the signals to cause the control valves in the aileron servo to operate. The aileron servo moves the ailerons to correct any tilting (motion about the longitudinal axis) when the airplane is under the control of the automatic pilot.

The amplifier is mounted on a drawer-like panel which slides into the amplifier rack, automatically plugging in all connections. It may be removed for adjustment or repair while the airplane is in flight.

CHARACTERISTICS:

Dimensions	approximately 3½ by 5½ by 10¼ inches
Weight	approximately 3¾ pounds
Power	alternating current, 115-volts, 3-phase, 400-cycles

ARMY

A. E. REFERENCE NUMBER: 60-8403

SPECIFICATIONS:

General	27329
Detail	27360 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

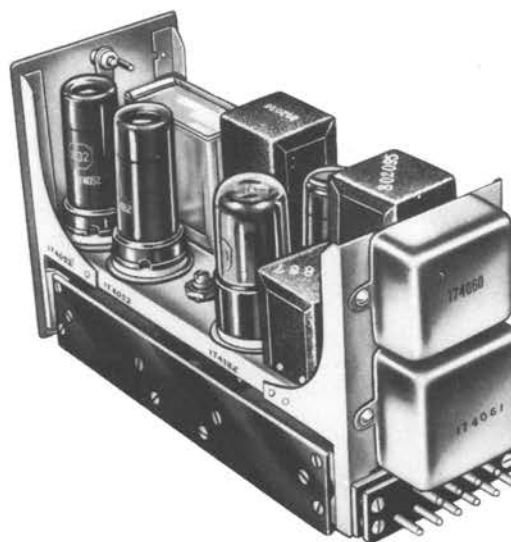
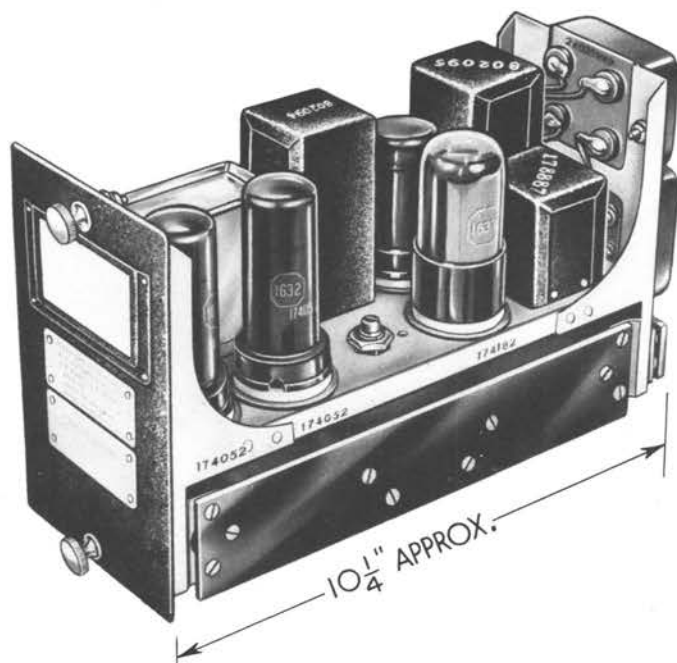
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644838	A-B	6000024400	05-45AD	106J/665
Electric Auto-Lite Company	644838	A-B	6000024400	05-45AD	106J/665
A. C. Spark Plug Division	644838	A-B	6000024400	05-45AD	106J/665



AMPLIFIER—ELEVATOR SERVO

A. E. REFERENCE NUMBER 60-8404

NAMES: Elevator servo amplifier
Servo amplifier

Elevator surface control amplifier
Servo type amplifier

DESCRIPTION: The elevator servo amplifier is part of the amplifier rack assembly of the Army type A-5 automatic pilot.

The amplifier receives the signals from the vertical control gyro. It then increases and modifies the signals to cause the control valves in the elevator servo to operate. The elevator servo moves the elevators to correct climbing or diving (motion about the lateral axis) when the airplane is under the control of the automatic pilot.

When the altitude control switch on the pilot's control panel is in the ON position, this amplifier receives and blends the gyro signal with any impulses from the altitude control amplifier and thus corrects any departure from the altitude established by the human pilot.

The amplifier is mounted in a drawer-like panel which slides into the amplifier rack, automatically plugging in all connections. It may be removed for adjustment or repair while the airplane is in flight.

CHARACTERISTICS:

Dimensions approximately 3½ by 5¼ by 10¼ inches
Weight approximately 4 pounds
Power alternating current, 115-volt, 3-phase, 400-cycle

ARMY

A. E. REFERENCE NUMBER: 60-8404

SPECIFICATIONS:

General 27329
Detail 27360 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

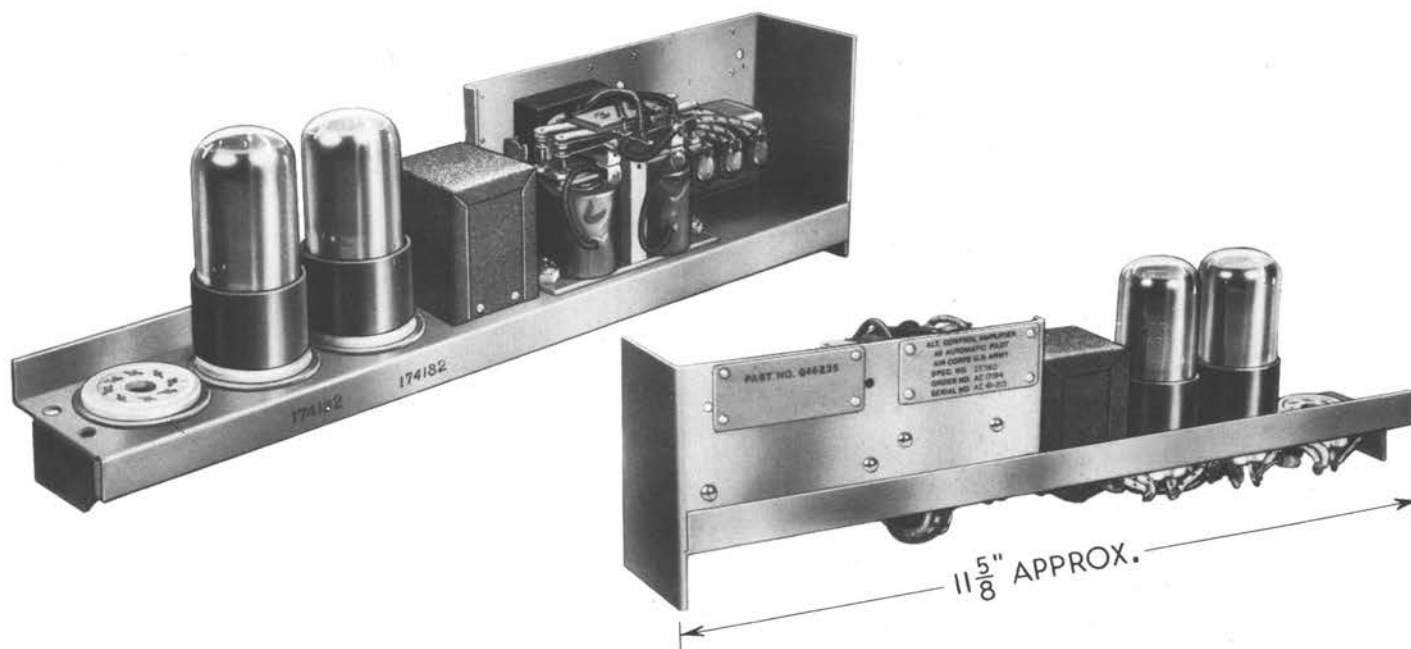
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	645919	A-B	6000024450	05-45AD	106J/666
Electric Auto-Lite Company	645919	A-B	6000024450	05-45AD	105J/666
A. C. Spark Plug Division	645919	A-B	6000024460	05-45AD	106J/666



AMPLIFIER—CONSTANT ALTITUDE CONTROL

A. E. REFERENCE NUMBER 60-8402

NAMES: Constant altitude control amplifier

Altitude control follow-up amplifier

DESCRIPTION: The constant altitude amplifier unit, part of the Army type A-5 automatic pilot, increases the strength of the signal originating in the altitude control unit.

When the altitude control switch is in the OFF position, the signal from the altitude control operates a follow-up motor which keeps the altitude control in a "zero signal" position to prevent sudden changes in altitude when the switch is turned ON.

When the altitude control is in the ON position, the amplifier signal is conducted to the servo amplifier, where it is combined with the elevator signal from the vertical gyro control.

CHARACTERISTICS:

Dimensions approximately 2 by 3 $\frac{3}{4}$ by 11 $\frac{5}{8}$ inches
 Weight approximately 1 $\frac{3}{4}$ pounds
 Power alternating current 115-volt, 3-phase, 400-cycle

ARMY

A. E. REFERENCE NUMBER: 60-8402

SPECIFICATIONS:

General 27329
 Detail 27360 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	646235	A-B	6000024320	05-45AD-1	106J/663
Electric Auto-Lite Co.	646235	A-B	6000024320	05-45AD-1	106J/663
A. C. Spark Plug Division	646235	A-B	6000024320	05-45AD-1	106J/663



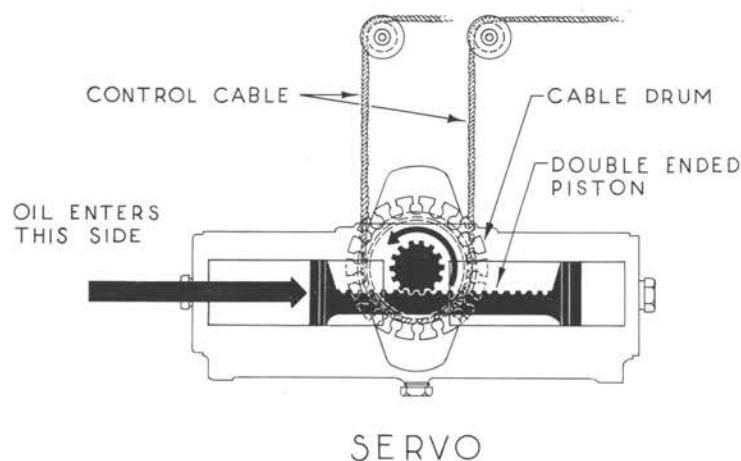
SERVO—A-5 AUTOMATIC PILOT

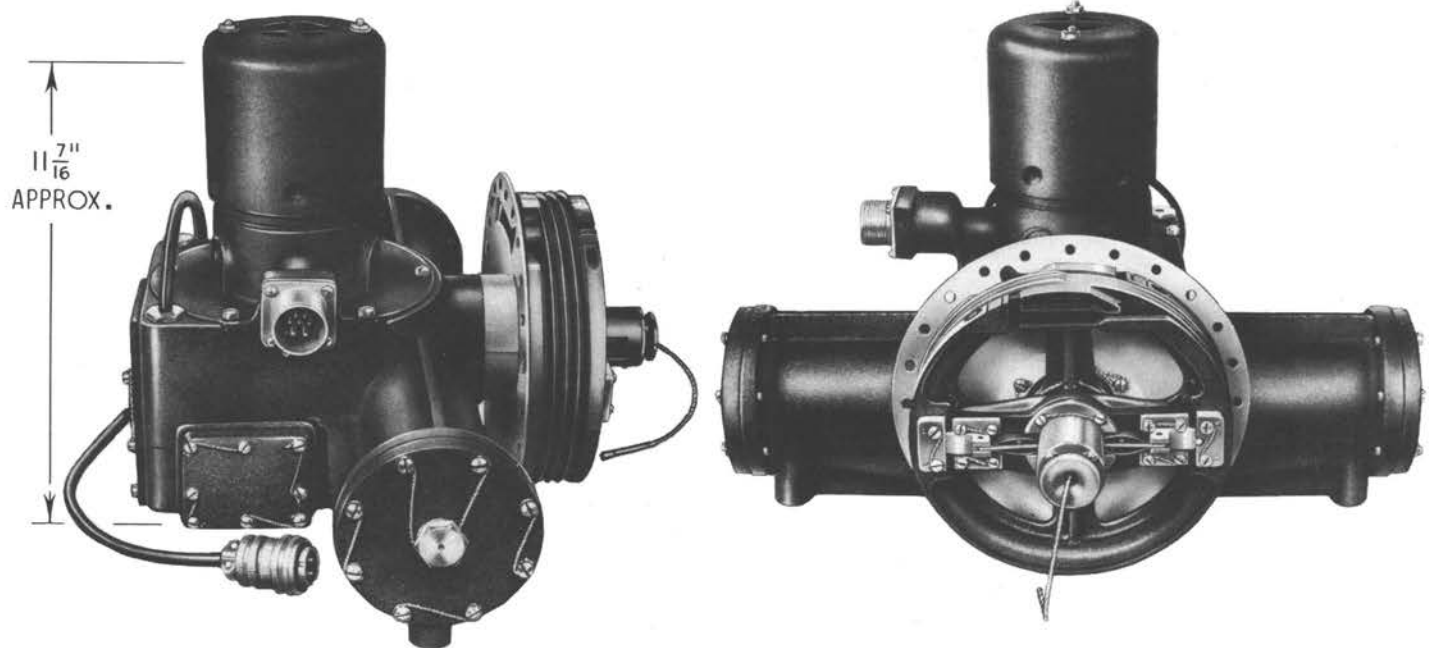
The servo, which is controlled by the electrical impulse from the servo amplifier, supplies hydraulic power for moving the airplane control surfaces, such as the rudder, ailerons and elevators.

Basically, the device depends upon two pistons, connected together by a shaft and operating in a cylinder, for its operation. The pistons are moved by oil pressure supplied by an integral motor operated gear pump.

The pump has two lines, connected, through solenoid-operated valves, to opposite ends of the cylinder. In the "neutral," or no-signal position, the valves permit oil to flow to a reservoir, and equal pressures are exerted on both of the pistons. When the servo amplifier applies a signal to the valve solenoid, the oil flow is so directed that more pressure is applied to one of the pistons than to the other, and the pistons move. This movement is transmitted by a rack and pinion to a pulley, and thence by control cables to the airplane's control surface.

An emergency release mechanism is incorporated, to disconnect the cable drum from the drive shaft in the event that the pilot's emergency switch fails to disengage the automatic pilot. In order to again operate through the servo in the event of such failure and emergency release, the cable drum must be reset. This can be done only when the airplane is on the ground. The servo unit also embodies a thermostatically controlled heating element, powered from the airplane electrical system, to heat the servo oil during low temperature operation.





SERVO—AILERON OR RUDDER

A. E. REFERENCE NUMBER 60-8418

NAMES: Aileron or rudder servo
Servo unit

Rudder and aileron control assembly
Electric-hydraulic type servo unit

DESCRIPTION: This servo, a part of the A-5 automatic pilot, is an electrically controlled hydraulic unit used for operating either the ailerons or rudder surfaces, depending upon the installation.

CHARACTERISTICS:

Dimensions	approximately 15 by 11 $\frac{7}{16}$ by 12 inches
Weight	approximately 22 pounds
Drum diameter	4 inches
Cable travel	5 inches
Power supply	27 volts direct current
Motor output	0.1 horsepower

ARMY

A. E. REFERENCE NUMBER: 60-8418

SPECIFICATIONS:

General	27329
Detail	27361 (part of)

A. A. F. DRAWING NUMBER: 42D20067

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

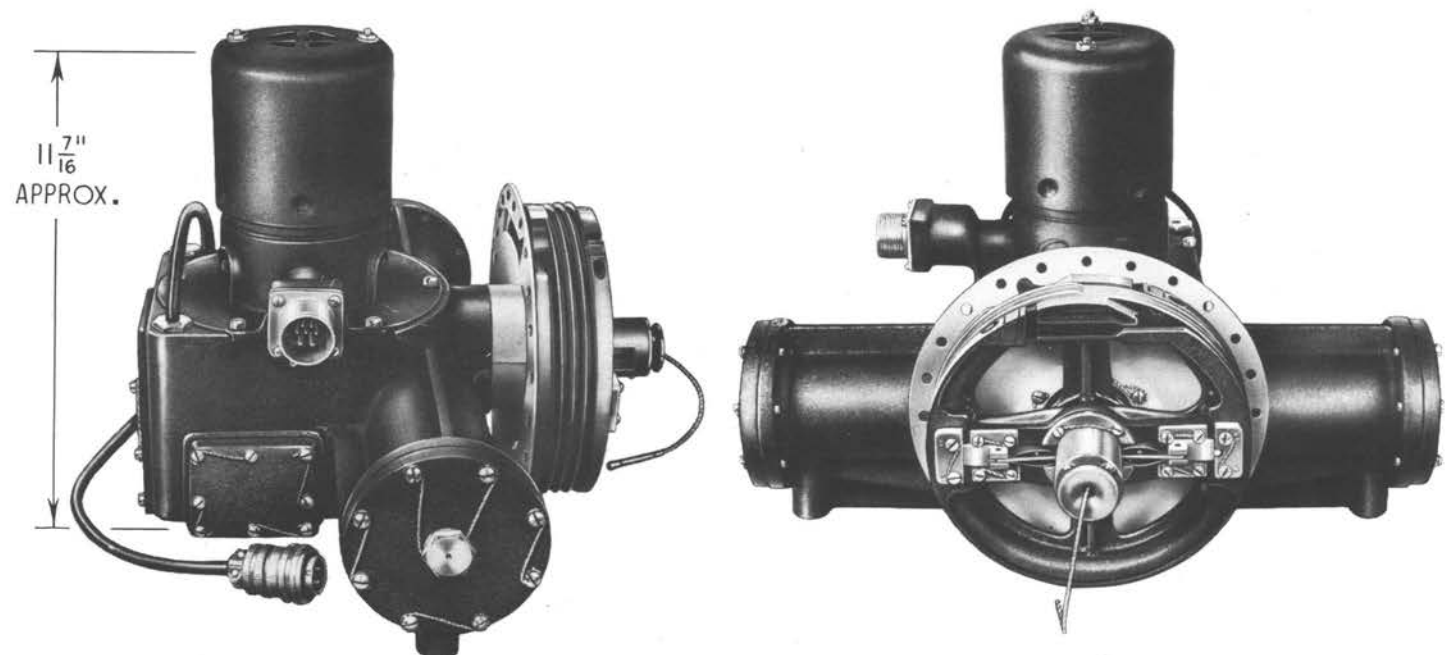
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	646853	A-B	6000097072	05-45AD	106J/677
Electric Auto-Lite Co.	646853	A-B	6000097072	05-45AD	106J/677
A. C. Spark Plug Division	646853	A-B	6000097072	05-45AD	106J/677



SERVO—AILERON OR RUDDER
A. E. REFERENCE NUMBER 60-8420

NAMES: Aileron or rudder servo
Servo unit
Rudder and aileron control assembly
Electric hydraulic type servo unit

DESCRIPTION: This servo, a part of the A-5 automatic pilot, is an electrically controlled hydraulic unit used for operating either the ailerons or rudder surfaces, depending upon the installation.

CHARACTERISTICS:

Dimensions	approximately 15 by 11 ⁷ / ₁₆ by 12 inches
Weight	approximately 22 pounds
Drum diameter	6 inches
Cable travel	8 inches
Power supply	27 volts direct current
Motor output	0.1 horsepower

ARMY

A. E. REFERENCE NUMBER: 60-8420

SPECIFICATIONS:

General	27329
Detail	27361 (part of)

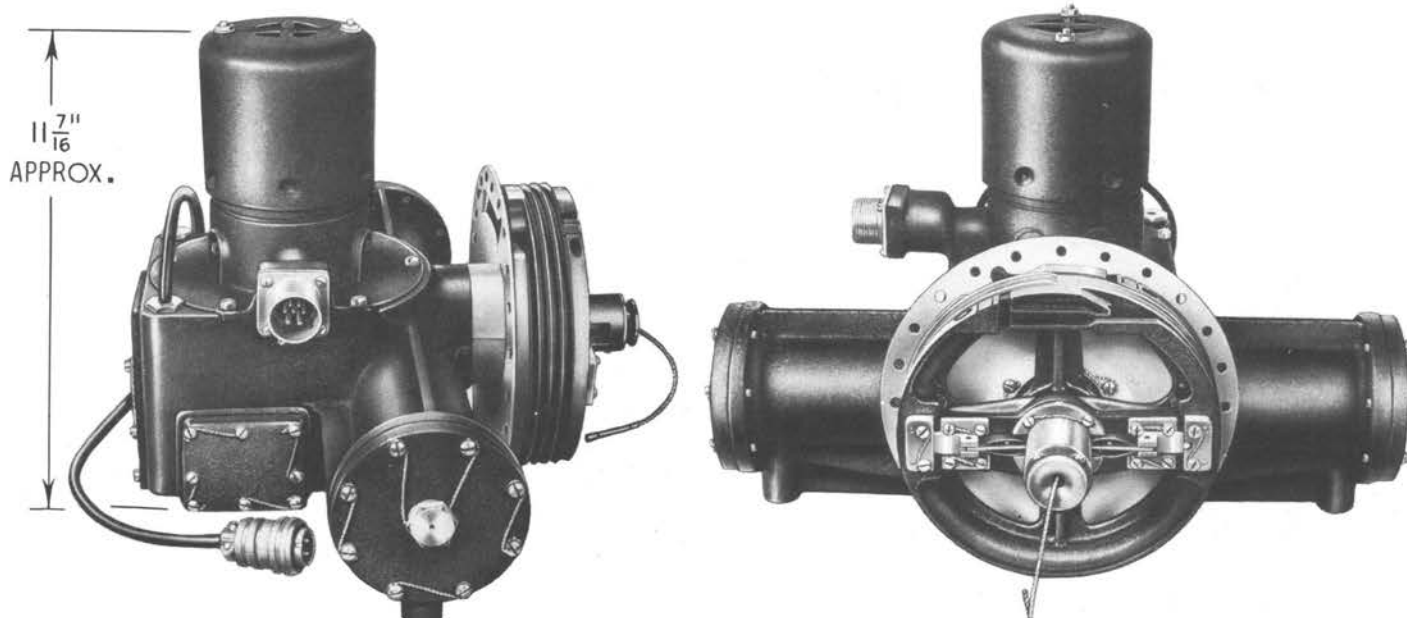
A. A. F. DRAWING NUMBER: 42D20067
A. S. C. STOCK NUMBER: Refer to chart.
TECHNICAL ORDER NUMBER: Refer to chart.
PRODUCTION STATUS: Under procurement.
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644833 Outline 645095	A-B	6000098400	05-45AD	106J/678
Electric Auto-Lite Co.	644833 Outline 645095	A-B	6000098400	05-45AD	106J/678
A.C. Spark Plug Division	644833 Outline 645095	A-B	6000098400	05-45AD	106J/678



SERVO-AILERON OR RUDDER

A. E. REFERENCE NUMBER 60-8416

NAMES: Aileron or rudder servo
Servo unit

Rudder and aileron control assembly
Electric hydraulic type servo unit

DESCRIPTION: This servo, a part of the A-5 automatic pilot, is an electrically controlled hydraulic unit used for operating either the ailerons or rudder surfaces, depending upon the installation.

CHARACTERISTICS:

Dimensions	approximately 15 by 11 $\frac{7}{16}$ by 12 inches
Weight	approximately 27 pounds
Drum diameter	6 inches
Cable travel	22 inches
Power supply	27 volts direct current
Motor output	0.2 horsepower

ARMY

A. E. REFERENCE NUMBER: 60-8416

SPECIFICATIONS:

General	27329
Detail	27361 (part of)

AN OR A. A. F. DRAWING NUMBER: 42D20068

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

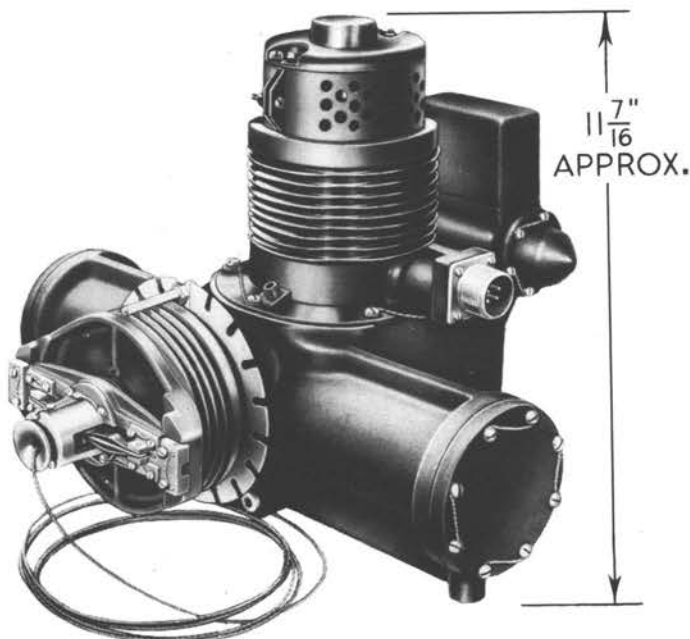
Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	646065	A-B	6000098450	05-45AD	106J/676
	*648558	A-B	6000096570	05-45AD	106J/756
Electric Auto-Lite Co.	646065	A-B	6000098450	05-45AD	106J/676
	*648558	A-B	6000096570	05-45AD	106J/756
A. C. Spark Plug Division	646065	A-B	6000098450	05-45AD	106J/676
	*648558	A-B	6000096570	05-45AD	106J/756

*REMARKS: Has electrical connector on right side of motor housing. See note below.

NOTE: Part number 648558 (A. E. Reference Number 60-8424) may be interchanged with part number 646065 by removing motor housing and reversing position so that the electrical connector is on the left side of the motor when facing the servo pulley.



AUTOMATIC PILOT INSTRUMENTS—NAVIGATION



SERVO—ELEVATOR

A. E. REFERENCE NUMBER 60-8417

NAMES: Elevator servo
Servo unit

Elevator control assembly
Electric hydraulic type servo unit

DESCRIPTION: This servo, a part of the Army type A-5 automatic pilot, is an electrically controlled hydraulic unit used for operating the elevator surfaces. The servo also contains an hydraulically operated electric switch which provides a signal for operating the trim tab control. See page 215.

CHARACTERISTICS:

Dimensions	approximately 15 by 11 $\frac{7}{16}$ by 14 $\frac{7}{8}$ inches
Weight	approximately 25 $\frac{3}{4}$ pounds
Drum diameter	4 inches
Cable travel	5 inches
Power supply	27 volts direct current
Motor output	0.1 horsepower

ARMY

A. E. REFERENCE NUMBER: 60-8417

SPECIFICATIONS:

General	27329
Detail	27361 (part of)

A. A. F. DRAWING NUMBER: 42D20067

A. S. C. STOCK NUMBER: Refer to chart

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

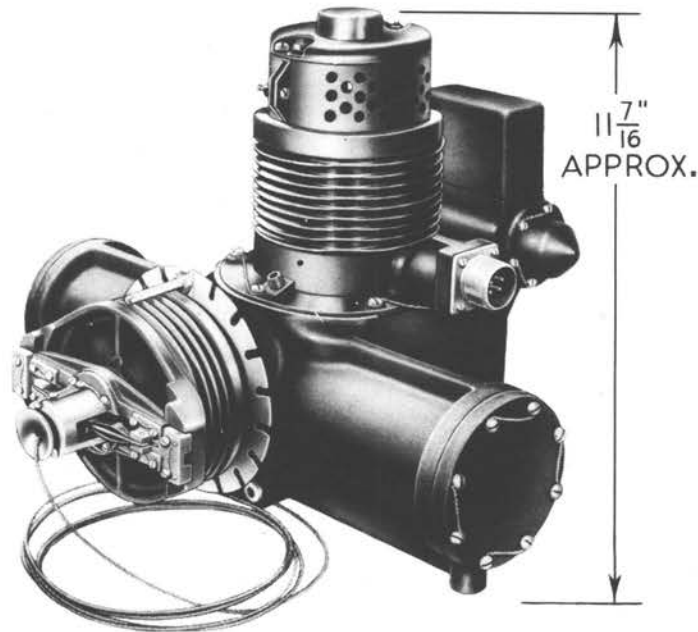
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	646852	A-B	6000097071	05-45AD	106J/672
Electric Auto-Lite Co.	646852	A-B	6000097071	05-45AD	106J/672
A. C. Spark Plug Division	646852	A-B	6000097071	05-45AD	106J/672



SERVO—ELEVATOR

A. E. REFERENCE NUMBER 60-8421

NAMES: Elevator servo
Servo unit

Elevator control assembly
Electric hydraulic type servo unit

DESCRIPTION: This servo, a part of the Army type A-5 automatic pilot, is an electrically controlled hydraulic unit used for operating the elevator surfaces. The servo also contains an hydraulically operated electric switch which provides a signal for operating the trim tab control. See page 215.

CHARACTERISTICS:

Dimensions	approximately 12 by 11 $\frac{7}{16}$ by 14 $\frac{7}{8}$ inches
Weight	approximately 25 $\frac{3}{4}$ pounds
Drum diameter	6 inches
Cable travel	8 inches
Power	27 volts direct current
Motor	0.1 horsepower

ARMY

A. E. REFERENCE NUMBER: 60-8421

SPECIFICATIONS:

General	27329
Detail	27361 (part of)

A. A. F. DRAWING NUMBER: 42D20067

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

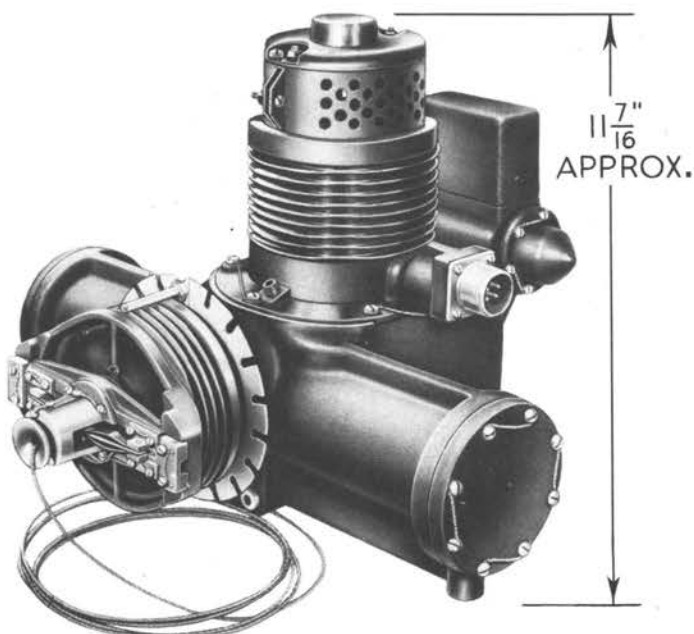
There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644832 Outline 645061	A-B	6000096620	05-45AD	106J/670
Electric Auto-Life Co.	644832 Outline 645061	A-B	6000096620	05-45AD	106J/670
A. C. Spark Plug Division	644832 Outline 645061	A-B	6000096620	05-45AD	106J/670



AUTOMATIC PILOT INSTRUMENTS—FLIGHT



SERVO-ELEVATOR

A. E. REFERENCE NUMBER 60-8415

NAMES: Elevator servo
Servo unit

Elevator control assembly
Electric hydraulic type servo unit

DESCRIPTION: This servo, a part of the Army type A-5 automatic pilot, is an electrically controlled hydraulic unit used for operating the elevator surfaces. The servo also contains an hydraulically operated electric switch which provides a signal for operating the trim tab control. See page 215.

CHARACTERISTICS:

Dimensions	approximately 15 by 11 $\frac{7}{16}$ by 14 $\frac{7}{8}$ inches
Weight	approximately 29 pounds
Drum diameter	4 inches
Cable travel	14 inches
Power supply	27 volts direct current
Motor output	0.2 horsepower

ARMY

A. E. REFERENCE NUMBER: 60-8415

SPECIFICATIONS:

General	27329
Detail	27361 (part of)

A. A. F. DRAWING NUMBER: 42D20068

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

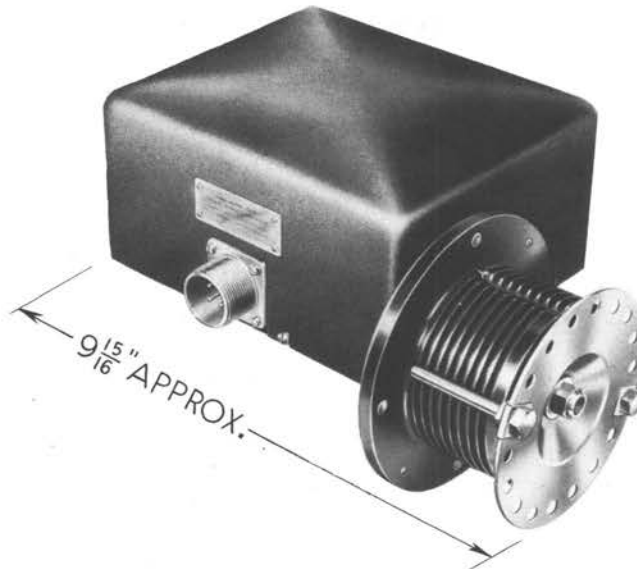
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	646454	A-B	6000096630	05-45AD	106J/671
Electric Auto-Lite Co.	646454	A-B	6000096630	05-45AD	106J/671
A. C. Spark Plug Division	646454	A-B	6000096630	05-45AD	106J/671



SERVO—TRIM TAB

A. E. REFERENCE NUMBER 60-8408

NAMES: Trim tab servo
Elevator trim tab servo

Elevator trim tab control assembly
Electric type servo unit

DESCRIPTION: The elevator trim tab servo, a part of the Army type A-5 automatic pilot, automatically controls the elevator trim tab in response to signals from a pressure switch on the elevator servo. The switch makes contact on one side or the other, in accordance with the direction of the pressure in the cylinder of the elevator servo.

Upon contact of the switch on either side, current flows through a relay and supplies power to the reversible electric motor of the trim tab control unit which operates the cable drum to adjust the position of the trim tab.

In this manner, automatic adjustment of the trim tab is made to compensate for any change in the airplane's loading during flight, such as would be caused by dropping the bomb load or by a shift of personnel from position in the tail to position in the center section.

CHARACTERISTICS:

Dimensions	approximately 6 $\frac{3}{4}$ by 5 $\frac{7}{8}$ by 9 $\frac{15}{16}$ inches
Weight	approximately 9 pounds
Cable travel	55 inches
Power	27 volts direct current

ARMY

A. E. REFERENCE NUMBER: 60-8408

SPECIFICATIONS:

General	27329
Detail	27362 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

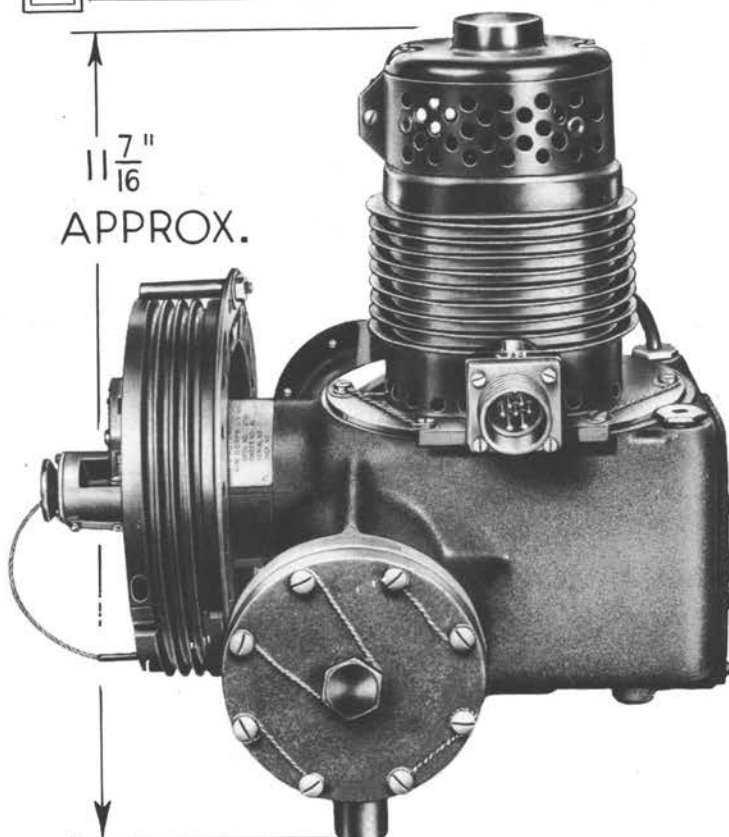
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	644840 Outline 77554	A-B	6000096645	05-45AD	106J/668
Electric Auto-Lite Co.	644840 Outline 77554	A-B	6000096645	05-45AD	106J/668
A. C. Spark Plug Division	644840 Outline 77554	A-B	6000096645	05-45AD	106J/668



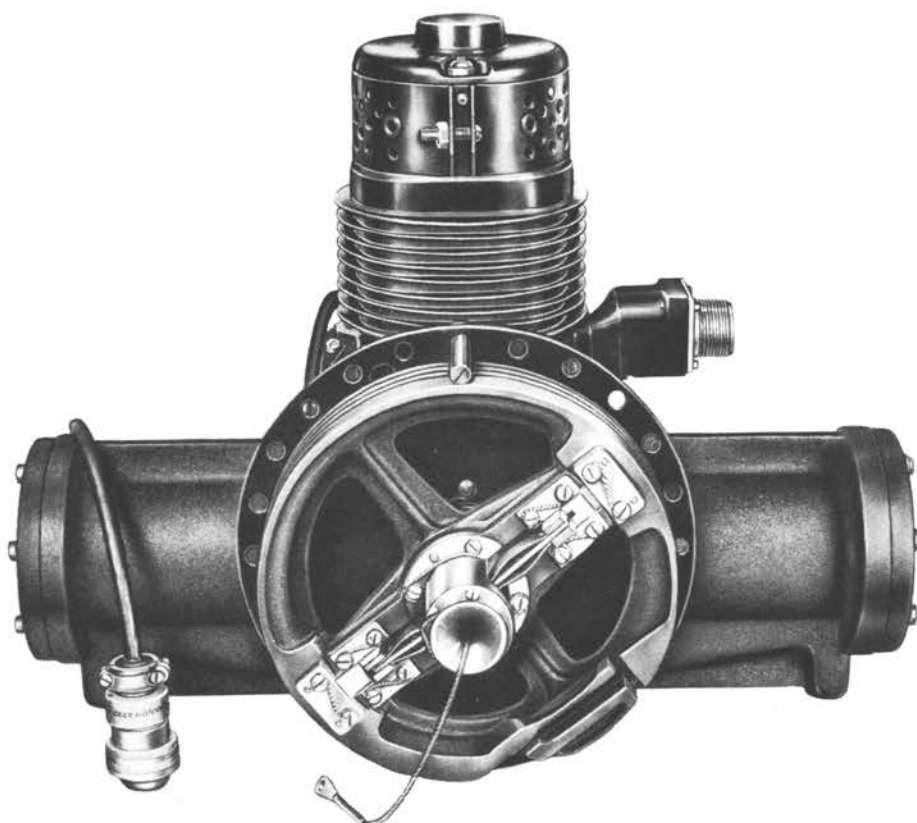
11 $\frac{7}{16}$ "
APPROX.

SERVO-AILERON

A. E. REFERENCE NUMBER 60-8424

NAMES: Aileron servo
Servo unit

Aileron control assembly
Electric-hydraulic type servo unit



(Continued on page 217)



SERVO—AILERON

(Continued from page 216)

DESCRIPTION: This servo, a part of the Army type A-5 automatic pilot, is an electrically controlled hydraulic unit used for operating the ailerons. The electrical receptacle is located on the right side of the motor housing when the observer is facing the servo pulley, and this limits its use to certain specific installations.

CHARACTERISTICS:

Dimensions	approximately 15 by 11 $\frac{7}{16}$ by 12 inches
Weight	approximately 27 pounds
Drum diameter	6 inches
Cable travel	22 inches
Power supply	27 volts direct current
Motor output	0.2 horsepower

ARMY

A. E. REFERENCE NUMBER: 60-8424

SPECIFICATIONS:

General	27329
Detail	27361 (part of)

AN OR A. A. F. DRAWING NUMBER: 42D20068

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	648558	A-B	6000096570	05-45AD	106J/756
Electric Auto-Lite Co.	648558	A-B	6000096570	05-45AD	106J/756
A. C. Spark Plug Division	648558	A-B	6000096570	05-45AD	106J/756



3 $\frac{5}{8}$ "
APPROX.



CONTROLLER-NAVIGATOR'S TURN

A. E. REFERENCE NUMBER 60-8409

NAMES: Navigator's turn controller

Remote turn controller

DESCRIPTION: The navigator's turn controller, part of the A-5 automatic pilot, incorporates a signal generator. It has two dials, the inner graduated in degrees from 0 to 10, the outer graduated in degrees from 0 to 360. When the selector switch on the pilot's control panel is in the position marked NAV., movement of the controller by the navigator at his station causes a signal to be generated and transmitted to the signal generator in the directional gyro control, thus causing the airplane to turn in the desired direction. Only flat turns can be made in this way.

Note: The newer models of the A-5 pilot do not have provision for control by the navigator.

CHARACTERISTICS:

Dimensions	approximately 2 $\frac{3}{8}$ by 3 $\frac{5}{8}$ by 3 $\frac{1}{2}$ inches
Weight	approximately 1 pound
Illumination	none
Markings	fluorescent
Rate of turn	180 degrees per minute, right or left.

MANUFACTURER: Sperry Gyroscope Company, Incorporated.

MANUFACTURER'S DRAWING NUMBER: 644834. Outline drawing 801989.

ARMY

A. E. REFERENCE NUMBER: 60-8409

SPECIFICATIONS:

General	27329
Detail	27363

A. S. C. STOCK NUMBER: 6000099700

TECHNICAL ORDER NUMBER: 05-45AD

PRODUCTION STATUS: Not under procurement for initial installation.

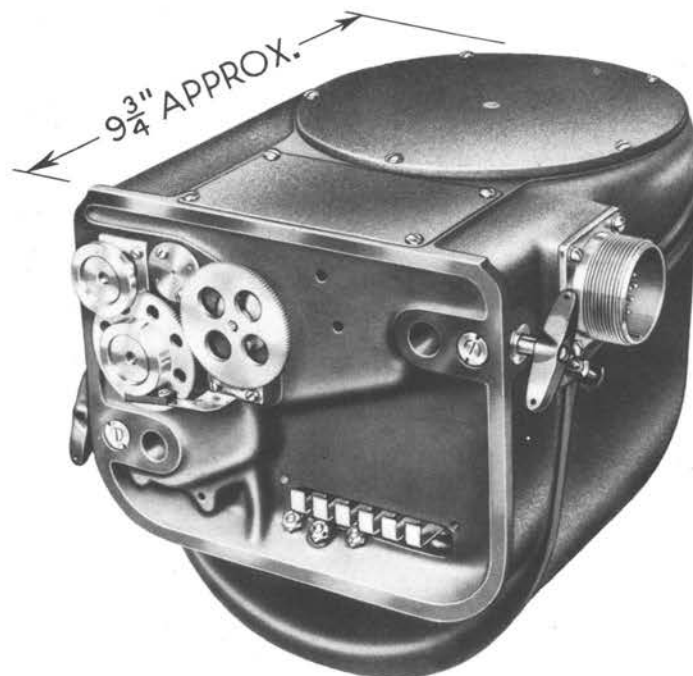
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106J/681



CONTROL—DIRECTIONAL GYRO

A. E. REFERENCE NUMBER 60-8422

NAMES: Directional gyro control

Azimuth gyro

DESCRIPTION: The directional gyro control, a part of the Army type A-5 automatic pilot, originates the electrical signal by which the airplane's forward direction is controlled.

The directional gyro control depends upon the use of a gyroscope, which spins about a horizontal axis, for its operation. The gyroscope, which is driven by an integral electric motor, furnishes the basic reference from which to determine changes in the airplane's direction.

The directional gyro control assembly consists, principally, of a gyroscope and driving motor with its housing, a follow-up motor, and a signal generator.

The gyroscope is suspended in a frame which allows freedom in all directions, and which is so arranged that when the airplane's direction changes, the difference between the position of this frame and an outer frame, which is rigidly mounted to the airplane, is translated into an electrical impulse by a magnetic pick-off.

The impulse is led from the pick-off to a follow-up amplifier, and the strengthened signal is returned to operate the follow-up motor. The follow-up motor causes the signal generator to send a signal to the servo amplifier, where it is amplified and used to operate the rudder servo valves. The servo then moves the airplane's rudder to bring the airplane to its prescribed course.

The directional gyro control automatically resets itself, after a correction to the airplane direction has been made, through the action of the follow-up system and a leveling magnet.

CHARACTERISTICS:

Dimensions.....	approximately 8½ by 8 by 9¾ inches
Weight.....	approximately 14½ pounds
Power.....	alternating current, 115 volts, 3 phase, 400 cycle

INSTALLATION PECULIARITIES: This unit to be used only with Directional Gyro Follow-up Amplifier, A. E. Reference Number 60-8423.

ARMY

A. E. REFERENCE NUMBER: 60-8422

SPECIFICATIONS:

General.....	27329
Detail.....	27358

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

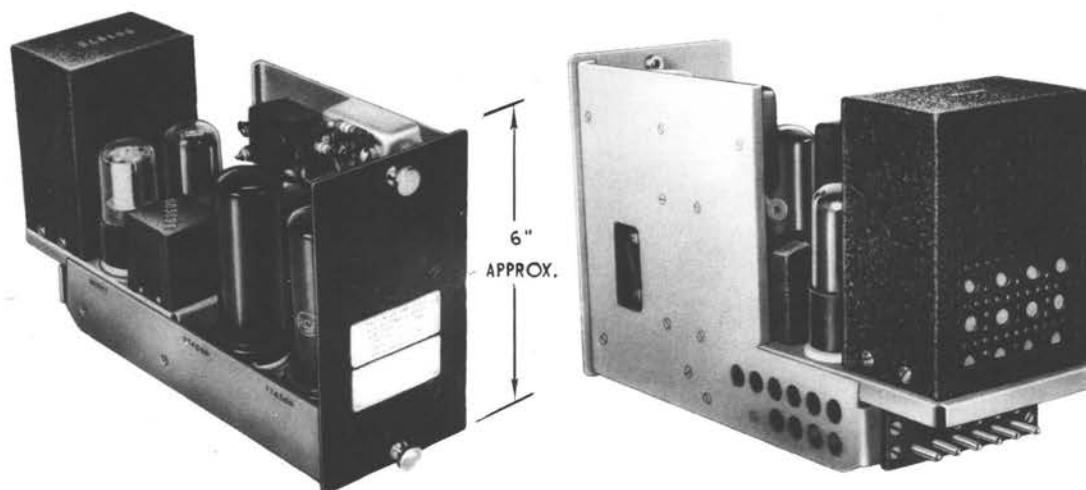
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	656029	A-B	6000096575	05-45AD	106J/749
Electric Auto-Lite Co.	656029	A-B	6000096575	05-45AD	106J/749
A. C. Spark Plug Division	656029	A-B	6000096575	05-45AD	106J/749



AMPLIFIER—DIRECTIONAL GYRO FOLLOW-UP

A. E. REFERENCE NUMBER 60-8423

NAMES: Directional gyro follow-up amplifier
Azimuth follow-up amplifier

Azimuth follow-up type amplifier

DESCRIPTION: The directional gyro follow-up amplifier, part of the Army type A-5 automatic pilot, receives the impulse from the directional gyro and prepares it for use in the follow-up drive motor relay of the directional gyro. The chassis also carries the leveling amplifier which receives the leveling signal from the directional gyro and amplifies it for use in a relay to energize the gyro leveling coil.

The amplifier is of the vacuum tube type. It slides into the amplifier rack, automatically making all electrical connections to the rack, and may be removed for adjustment or repair while the airplane is in flight.

CHARACTERISTICS:

Dimensions.....approximately 3½ by 6 by 10 inches
Weight.....approximately 6 pounds
Power.....alternating current, 115-volt, 3-phase, 400-cycle

INSTALLATION PECULIARITIES: This unit to be used only with Directional Gyro Control, A. E. Reference Number 60-8422.

ARMY

A. E. REFERENCE NUMBER: 60-8423

SPECIFICATIONS:

General.....27329
Detail.....27360 (part of)

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

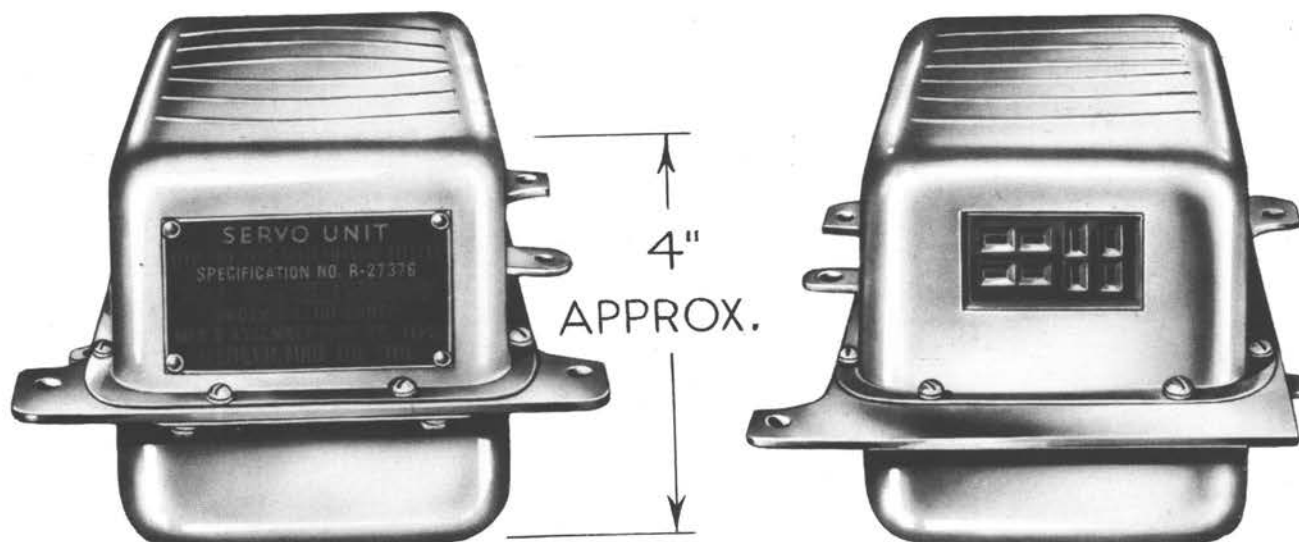
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	656030	A-B	6000024305	05-45AD-1	106J/748
Electric Auto-Lite Co.	656030	A-B	6000024305	05-45AD-1	106J/748
A. C. Spark Plug Division	656030	A-B	6000024305	05-45AD-1	106J/748

**SERVO—ELECTRIC****ARMY TYPE D-1**

NAMES: Electric servo
Control unit

Four inch stroke servo
Servo unit

DESCRIPTION: This electric servo unit is used to control the heading and attitude of radio-controlled miniature target airplanes. The unit, which is mounted in the airplane, consists of two reversible direct current motors with operating relays. Each motor moves a lever arm through reduction gearing. Through control cables, one arm operates the rudder surface, and the other arm operates the elevator surface.

Control signals originate in a remotely located sending set, and are received by a radio receiver located within the airplane. The output of the receiving set is used to operate the relays in the servo, which in turn operate the servo motors to control the airplane's flight.

CHARACTERISTICS:

Dimensions approximately 4 by 4 by 6 inches
Weight approximately 1½ pounds
Direct current input 6 volts; 500 milliamperes

MANUFACTURER: Hansen Manufacturing Co., Inc.

MANUFACTURER'S PART NUMBER: 7000

ARMY

A. E. REFERENCE NUMBER: 60-1800

SPECIFICATIONS:

Detail R-27376-A
Superseded R-27376

TYPE DESIGNATION: D-1

A. S. C. STOCK NUMBER: 6000097120

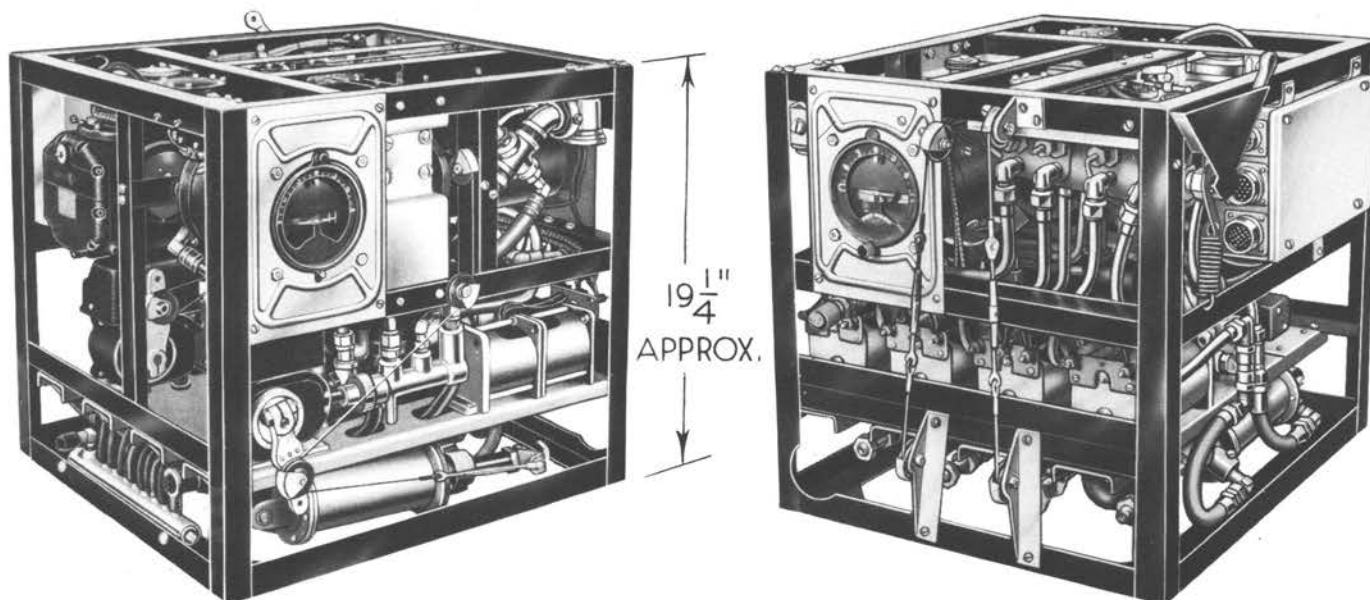
TECHNICAL ORDER NUMBER: 11-55AA

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.



SERVO—HYDRAULIC

A-3

NAMES: Hydraulic servo
Control unit—three axes stabilized
Three axes stabilized control unit

Hydraulic servo—three axes stabilized control
Automatic pilot

DESCRIPTION: This hydraulic servo is an accessory to the automatic pilot, embodying in one assembly the mechanism necessary for controlling all of the movements of an airplane. In addition to automatically maintaining a predetermined course and altitude, this unit makes possible remote control of the airplane by radio, or direct control from within the airplane itself. The unit must have a direct-current electrical supply, a source of vacuum and a source of oil pressure for operation. These are usually provided separately by engine-driven pumps and a generator.

The unit may be divided into three functional groups for purposes of explanation. The first group originates the signal, the second group converts the signal for use in the servos and the third group produces mechanical motion in the various control surfaces.

Reference planes are established in the first functional group by three vacuum-operated gyroscopes, two of which are mounted with vertical axes, and the third mounted with an horizontal axis. The gyroscopes contain vacuum pick-offs which, whenever the plane's altitude changes from its predetermined setting, or when a signal is introduced from the control panel, originate impulses which change the plane's direction or altitude. The pick-offs consist of small apertures, which are uncovered or covered, depending upon the position of the gyroscope. When the aperture is uncovered, the vacuum system is permitted to function through a line leading to a vacuum-operated switch.

In order to change the position of the vacuum pick-offs so that the airplane may be controlled externally, direct current electric motors called "trim motors" are used. These motors, through a system of pulleys, change the position of the vacuum pick-offs.

The second functional group consists of electrical circuits, vacuum-operated switches and solenoid controlled hydraulic valves, which convert the signals originated in the gyros so that they will operate the servo units. The signal from the vacuum pick-offs operates the electric switch. This switch then opens or closes the solenoid valve and changes the quantity of hydraulic fluid flowing to the servo.

The third functional group consists of four servos and their associated equipment. The servos are mechanically connected to operate the control surfaces and brakes. They are so arranged that when pressure is exerted on one face of the piston, the port leading to the other face is opened through a relief valve to a reservoir. The valves are controlled by the solenoids of the second group.

The controls for the unit are embodied in a device, separately mounted, known as the "metal stick." This device contains switches and relays for manual operation by the person controlling the

(Continued on page 223)



SERVO-HYDRAULIC

(Continued from page 222)

airplane. When used as a remote-operating device, the "metal stick" is mounted in another airplane, or on the ground. The signals from the stick are fed into a radio sending set, and picked up by a radio receiving set located in the controlled airplane. The signal from the radio receiver relays is then led to the trim motor, which moves the vacuum pick-off and begins the correction to the airplane direction.

When the "metal stick" is used for direct operation of the airplane, it is mounted in the pilot's cockpit, and its output is fed directly into the stabilized unit.

CHARACTERISTICS:

Dimensions	approximately 17 by 20 by 19¼ inches
Weight	approximately 112 pounds
Hydraulic pressure	40 to 160 pounds per square inch
Vacuum	2 to 4 inches of mercury, vacuum
Voltage	12 volts direct current

MANUFACTURER: Aro Equipment Corporation.

MANUFACTURER'S DRAWING NUMBER: T-502-3B

ARMY

A. E. REFERENCE NUMBER: 60-1825

SPECIFICATIONS: Detail R-27381

A. A. F. DRAWING NUMBER: 42N4279

TYPE DESIGNATION: A-3

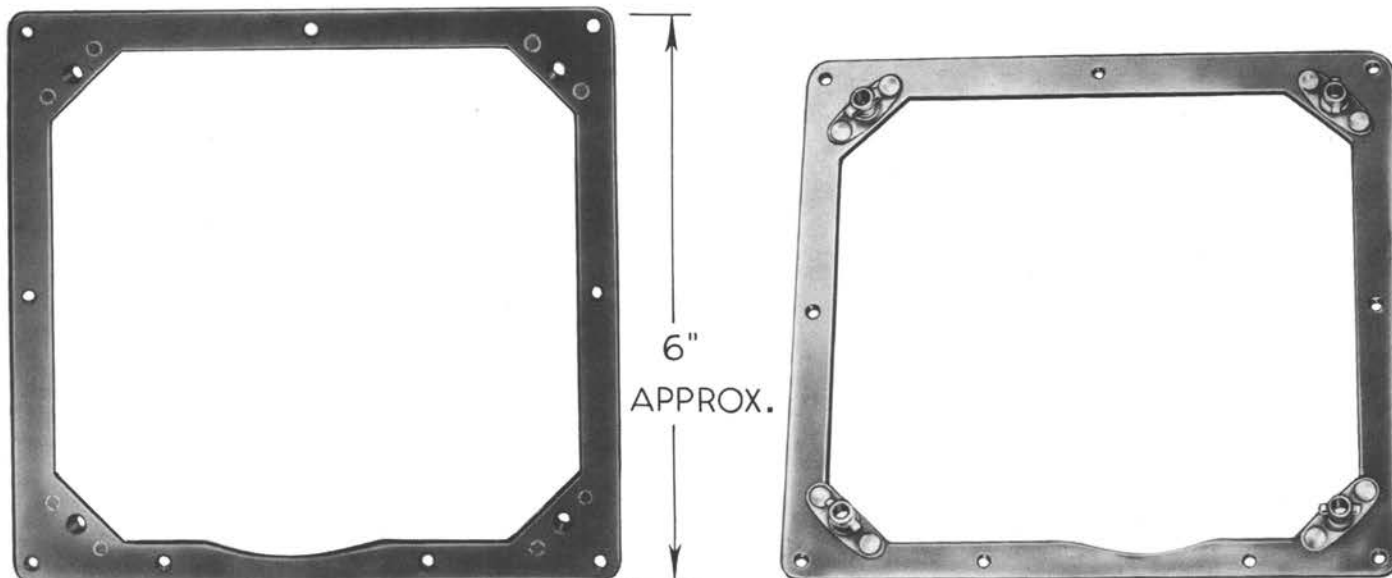
A. S. C. STOCK NUMBER: 6000323075

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.



FRAME—SINGLE MOUNTING

ARMY PART NUMBER 43B7625

NAME: Single mounting frame

DESCRIPTION: This is an aluminum alloy frame, having on the reverse side four elastic stop nuts for attaching a mounting plate to permit installation or removal of flight instruments from the front of the instrument panel.

CHARACTERISTICS:

Dimensions.....approximately 6 by 5¾ by ½ inches
Weight.....approximately 2 ounces

RELATIONSHIP OF PARTS: This unit is attached to rear of instrument panel to accommodate mounting plates, A. E. Reference Numbers 60-8100 or 60-8105, for the front mounting of the gyro horizon indicator or directional gyro indicator.

ARMY

A. E. REFERENCE NUMBER: 60-2350

A. A. F. DRAWING NUMBER: 43B7625

A. S. C. STOCK NUMBER: 6300623118

MANUFACTURER: Sperti Incorporated; Part Number 43B7625.

PRODUCTION STATUS: Under procurement.

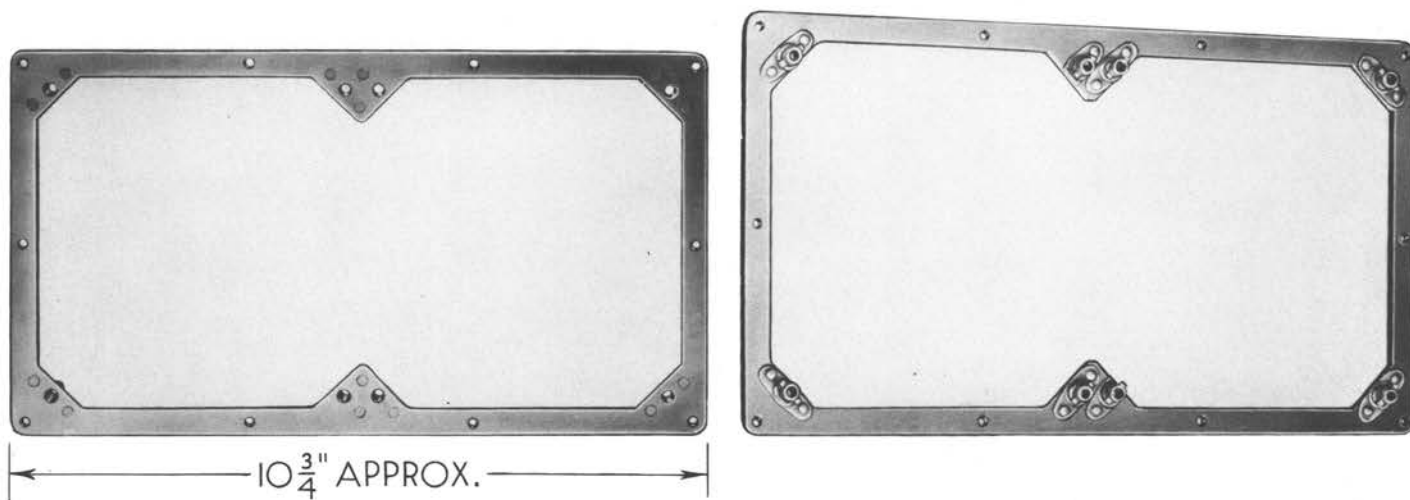
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1377



FRAME—DOUBLE MOUNTING

ARMY PART NUMBER 43D7014

NAME: Double mounting frame

DESCRIPTION: This is an aluminum alloy frame, having on the reverse side 8 electric stop nuts for attaching two mounting plates, to permit the installation or removal of flight instruments from the front of the instrument panel.

CHARACTERISTICS:

Dimensions.....approximately 6 by 10 $\frac{3}{4}$ by $\frac{1}{2}$ inches
Weight.....approximately 3 $\frac{1}{8}$ ounces

RELATIONSHIP OF PARTS: This unit is attached to the rear of the instrument panel to accommodate mounting plates, A. E. Reference Numbers 60-8100 and 60-8105, for the front mounting of the gyro horizon indicator and directional gyro indicator.

ARMY

A. E. REFERENCE NUMBER: 60-2355

A. A. F. DRAWING NUMBER: 43D7014

A. S. C. STOCK NUMBER: 6300623117

MANUFACTURER: Sperti Incorporated, part number 43D7014

PRODUCTION STATUS: Under procurement.

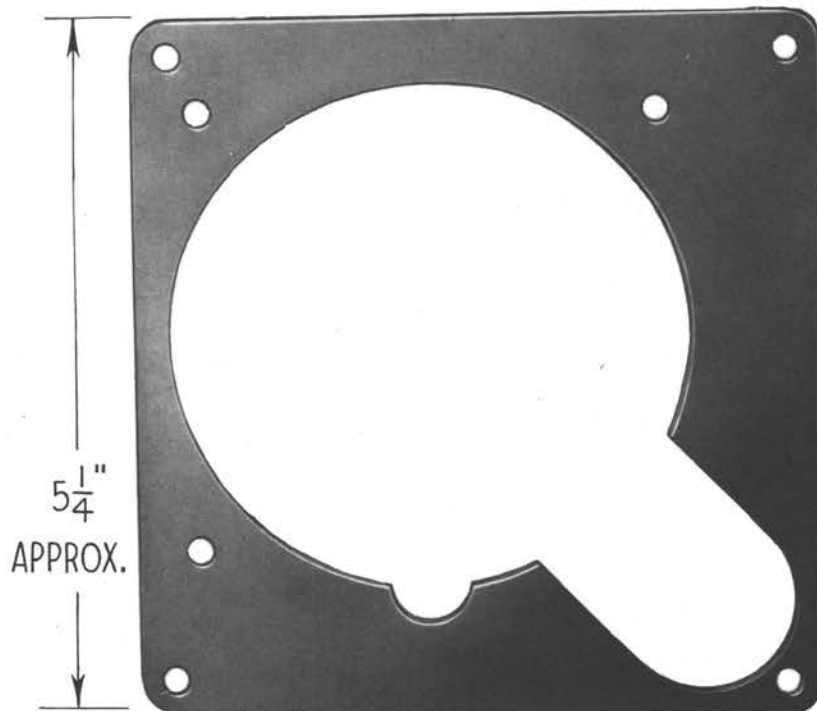
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1378

**PLATE—FRONT MOUNTING****ARMY PART NUMBER 43B7016**

NAME: Front mounting plate

DESCRIPTION: This front mounting plate is used with mounting frames to permit mounting and removal of the gyro horizon indicator from the front of the instrument panel. The plate is the same thickness as the instrument panel.

CHARACTERISTICS:

Size.....approximately 5 by 5 $\frac{1}{4}$ by $\frac{1}{8}$ inches
 Weight.....approximately 2 $\frac{1}{2}$ ounces

RELATIONSHIP OF PARTS: This unit is attached to a mounting frame, A. E. Reference Number 60-2350 or 60-2355.

ARMY

A. E. REFERENCE NUMBER: 60-8100

A. A. F. DRAWING NUMBER: 43B7016

MANUFACTURER'S DRAWING NUMBER: Sperti, Inc., 43B7016

A. S. C. STOCK NUMBER: 6300735537-3

PRODUCTION STATUS: Under procurement.

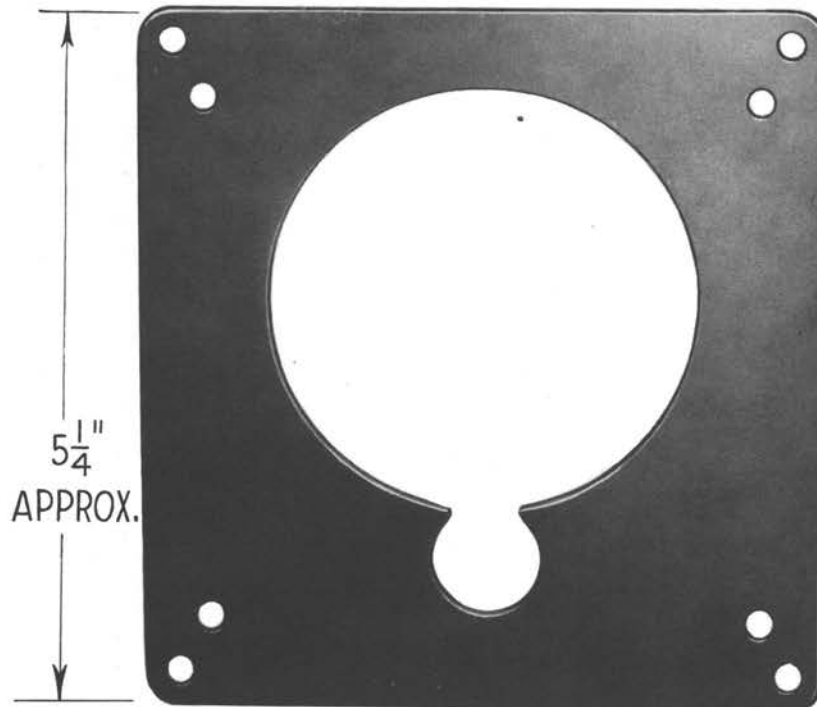
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1379

**PLATE—FRONT MOUNTING**

ARMY PART NUMBER 43B7015

NAME: Front mounting plate

DESCRIPTION: This front mounting plate is used with mounting frames to permit mounting and removal of the directional gyro indicator from the front of the instrument panel.
The plate is the same thickness as the instrument panel.

CHARACTERISTICS:

Size.....approximately 5 by 5 1/4 by 1/8 inches
Weight.....approximately 3 1/2 ounces

RELATIONSHIP OF PARTS: This unit is attached to a mounting frame, A. E. Reference Number 60-2350 or 60-2355.

ARMY

A. E. REFERENCE NUMBER: 60-8105

A. A. F. DRAWING NUMBER: 43B7015

MANUFACTURER'S DRAWING NUMBER: Sperti, Inc., 43B7015

A. S. C. STOCK NUMBER: 6300735537

PRODUCTION STATUS: Under procurement.

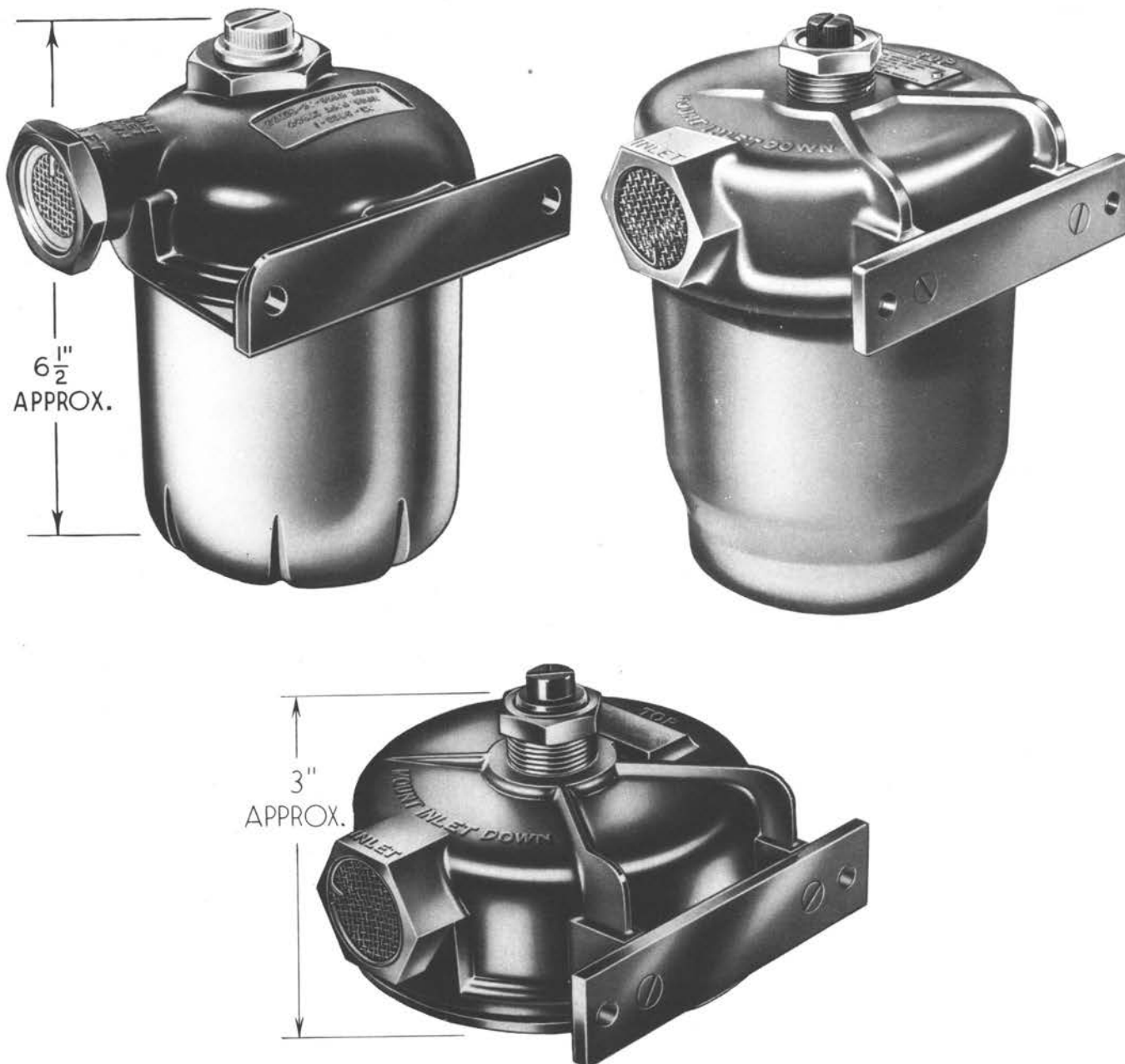
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1380



FILTER—AIR

AN5822-1

FORMER NAVY TYPE MARK III

F. S. S. C. NUMBER 88-F-1035

NAMES: Air filter

Central system air filter

Filter; air, 10 C.F.M. (vacuum-operated instruments)

Filter, air, vacuum-operated instruments

Filter, air directional gyro

DESCRIPTION: Air and vacuum-driven instruments require a constant supply of air which is free from foreign matter. This air filter has a removable filtering element. The air inlet is covered by a removable screen, to prevent the entry of large objects such as insects, etc.

On pressurized cabin airplanes, the filter may be mounted outside the cabin, but the inlet port must be connected to the interior of the cabin to prevent the instruments from being subjected to an excessive pressure differential.

Although different in appearance, the filters pictured above have the same capacity and mounting dimensions.

(Continued on page 229)

FILTER-AIR

(Continued from page 228)

CHARACTERISTICS:

Capacity 10 cubic feet per minute
 Dimensions refer to chart
 Weight refer to chart.

ARMY

A. E. REFERENCE NUMBER: 60-8303

SPECIFICATIONS:

Detail AN-F-9A
 Superseded 94-27366; AN-F-9

AN DRAWING NUMBER: AN5822

AN PART NUMBER: AN5822-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

FORMER TYPE DESIGNATION: Mark III.

SPECIFICATIONS: Detail AN-F-9A

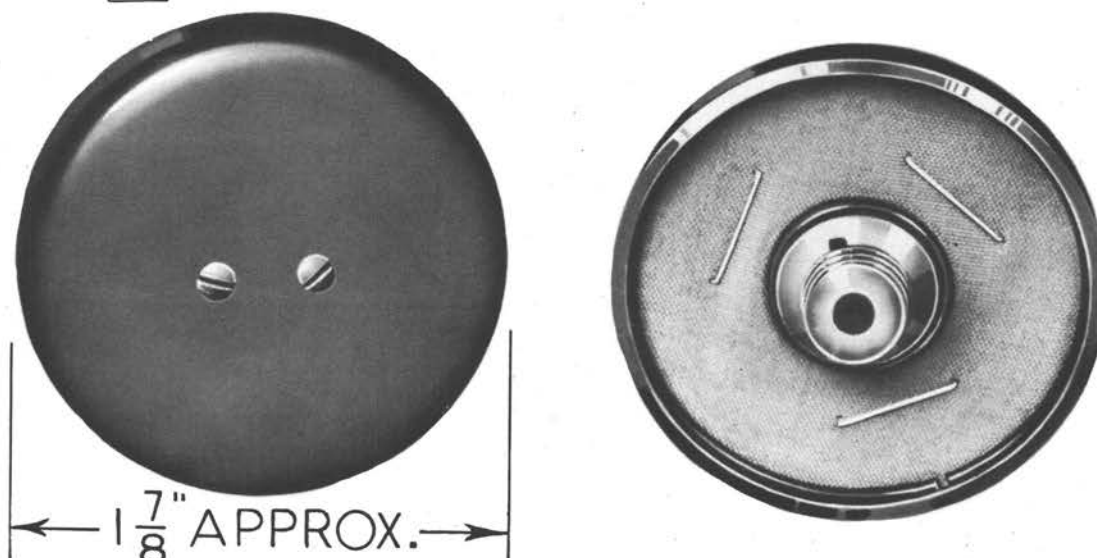
AN DRAWING NUMBER: AN5822

F. S. S. C. STOCK NUMBER: 88-F-1035

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 7
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Dimensions Approximately— Inches	Weight Approx- imately— Pounds	Current Model (X)	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperry Gyroscope Co., Inc.	76516	76516	5½ by 6½ by 4¾	2¼		A-N-B-C	6000103800	05-45AB	106J/604
	647984	647984	5½ by 6½ by 4¾	1⅝	X	A-N-B-C	6000103850	05-45AB	106J/702
Purolator Products, Inc.	24330	24330	5½ by 6½ by 4¾	2¼		A-N-B-C			106J/604
	PA-11	28102	5½ by 7 by 4¾	1½	X	A-N-B-C	6000103750	05-1-31	106J/702
	PA-12	28668	5½ by 3 by 4¾	1½	X	A-N-B-C	6000103760	05-1-34	106J/702
Jack & Heintz, Inc.	JH3116	JH3116	5½ by 6½ by 4¾	1⅞	X	A-N-B	6000103700	05-45BA	106J/704
Skinner Purifiers, Inc.	27300	27300	5½ by 6½ by 4¾	1⅞	X	A-N-B-C	6000103875		106J/704



FILTER—TURN AND BANK INDICATOR AIR

AN5821-1 F.S.S.C. NUMBER 88-F-1000

NAMES: Turn and bank indicator air filter
Bank and turn indicator air filter

Air filter

DESCRIPTION: This filter is for use with vacuum operated turn and bank indicators when the installation does not provide a central air filter. It consists of a filter pad stapled to a brass 100 mesh screen and attached to the underside of a concave cap. The filter has a $\frac{1}{8}$ inch external pipe thread, so that it may be attached to the instrument air inlet. The air passes through the screen filter, and then through the threaded stem into the instrument.

CHARACTERISTICS:

Screen.....	100 mesh
Screen material.....	brass
Dimensions.....	approximately $1\frac{7}{8}$ diameter by $2\frac{1}{32}$ inches
Weight.....	approximately 2 ounces

ARMY

A. E. REFERENCE NUMBER: 60-2300

SPECIFICATIONS:

Detail.....	AN-F-2
Superseded.....	27349

AN DRAWING NUMBER: AN5821

AN PART NUMBER: AN5821-1

A. S. C. STOCK NUMBER: 6000618775

TECHNICAL ORDER NUMBER: (Part of) 05-20-2

MANUFACTURER: Pioneer Instrument, Division Bendix Aviation Corp.

MANUFACTURER'S MODEL NUMBER: K-1

MANUFACTURER'S PART AND DRAWING NUMBER: 13362

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail..... AN-F-2

AN DRAWING NUMBER: AN5821

A. S. O. OR F. S. S. C. STOCK NUMBER: 88-F-1000

PROCUREMENT STATUS: Standard G.F.E.—Order through A. S. O. by F. S. S. C. number.

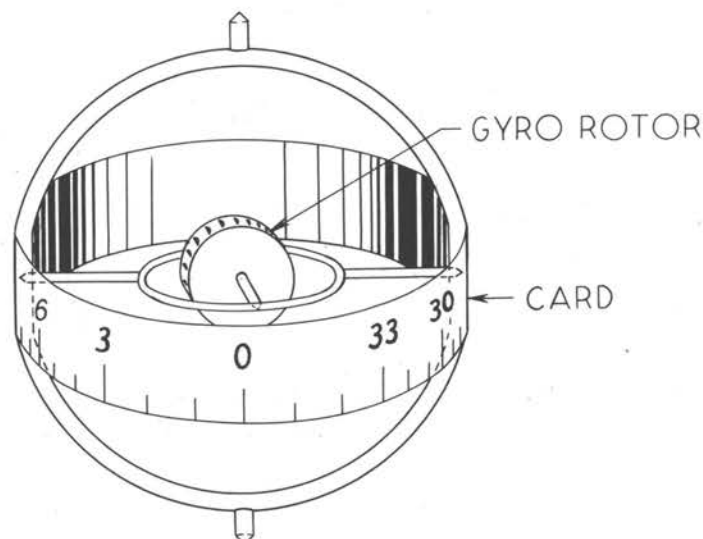
BRITISH

BRITISH REFERENCE NUMBER: 106A/1433



DIRECTIONAL GYRO

The directional gyro, or turn indicator, is used to establish a fixed reference for maintaining flight direction. It supplements the compass in keeping a specific course, indicates magnitude of turn, and assists in maintaining airplane alignment when making instrument landings. The turn indicator is valuable when used in conjunction with the compass card, because the indicator neither swings nor oscillates when the airplane changes direction.



Basically, the directional gyro consists of either an electrically driven or a vacuum-driven gyroscope, restrained so that the axis of rotation of the gyroscope may not become completely vertical, but providing freedom of motion in all other directions within a stationary frame fixed to the airplane. When the airplane turns, the gyro tends to remain fixed. A scale, graduated in degrees of azimuth, which is attached to a vertical ring support of the gyro, is visible to the pilot through a rectangular opening in the instrument face. This card remains fixed with the gyro rotor, and, as the airplane turns, it affords an indication of the change in the airplane's direction.

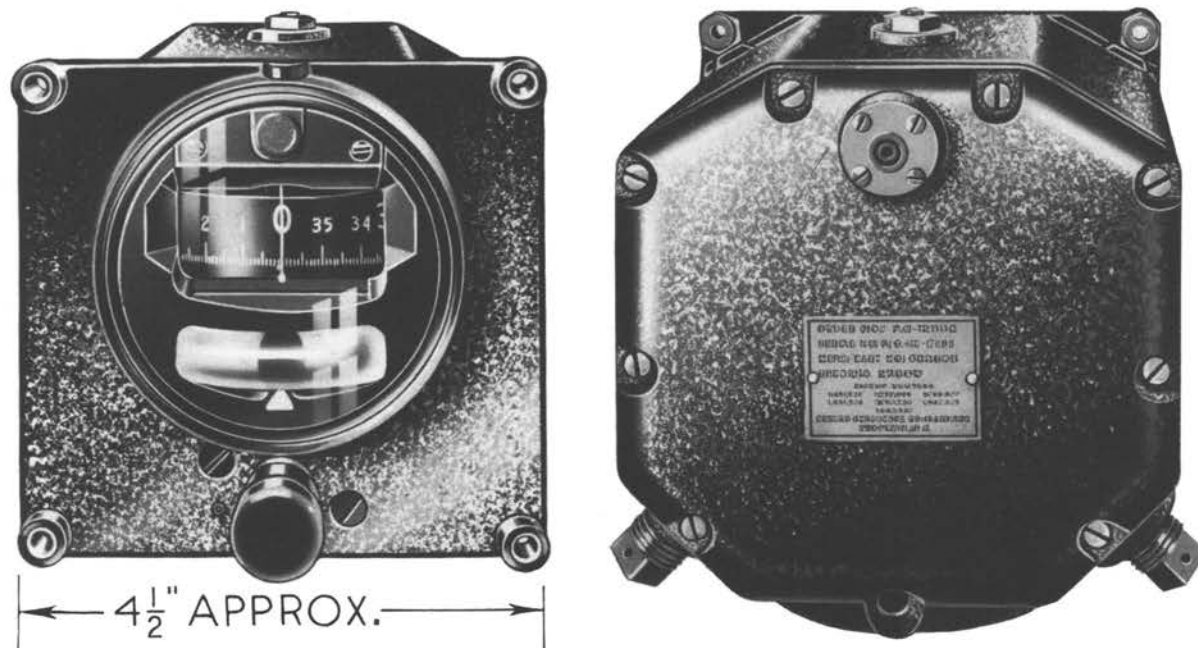
A "caging" mechanism which locks the gyro axis horizontal is provided, in order to align the gyroscope. The caging knob permits setting a reference reading on the indicator card. During violent maneuvers, the instrument should be caged, to avoid damage.

Some indicators (Type "B") have provision for remotely adjusting the indicator card reading through a flexible shaft and remote controller. This arrangement permits the navigator, from his station, to correct the course setting on the pilot's turn indicator card.

Older instruments are provided with an inclinometer, or ball level, which indicates whether the proper bank is being maintained during turns, and also shows whether or not the airplane wings are level during straight flight.

The source of vacuum for vacuum-operated gyros may be either an engine-driven air pump or a venturi tube. A filter must be provided to clean the air entering the instrument. This filter may be a large one, used for all the vacuum instruments in the airplane, or each instrument may be provided with an individual filter.

Electrically-driven instruments utilize an inverter in the airplane as a source of alternating current power.



INDICATOR—DIRECTIONAL GYRO

ARMY TYPE A-3

NAMES: Directional gyro indicator
Turn indicator

Gyro directional indicator

DESCRIPTION: The Army type A-3 directional gyro indicator is equipped with a vacuum-driven gyroscope. The dial includes a ball bank inclinometer. This unit is mounted on the instrument panel in the pilot's compartment. It is connected through a vacuum gage and selector valve to a source of vacuum, either an engine driven air pump or a venturi tube.

CHARACTERISTICS:

Dimensions	approximately 4½ by 5¼ by 6 inches
Weight	approximately 4¼ pounds
Air filter	individual or central
Illumination	3-volt dial lamp
Markings	fluorescent radio-active
Power	vacuum—4 inches of mercury
Vacuum connections	two ¼-inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-7500

SPECIFICATIONS:

Detail	94-27800
Superseded	27800

TYPE DESIGNATION: A-3

MANUFACTURER: Sperry Gyroscope Company.

MANUFACTURER'S PART AND DRAWING NUMBER: 642805

A. S. C. STOCK NUMBER: 6000198325

TECHNICAL ORDER NUMBER: 05-20-4

PRODUCTION STATUS: Not under procurement for initial installation.

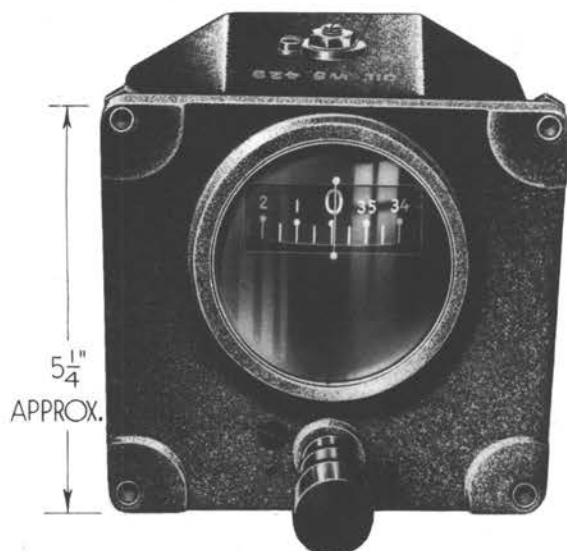
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/635



INDICATOR—DIRECTIONAL GYRO

AN5735-2 F.S.S.C. NUMBER 88-I-969

NAMES: Directional gyro indicator
Turn indicator

Gyro directional indicator

DESCRIPTION: This unit is equipped with a vacuum-driven gyroscope, and is used on night fighters. It is mounted on the instrument panel in the pilot's compartment, and is connected through a vacuum gage and selector valve to a source of vacuum, either an engine driven air pump or a venturi tube.

CHARACTERISTICS:

Dimensions	approximately 4½ by 5¼ by 7 inches
Weight	approximately 4¼ pounds
Air filter	individual or central
Illumination	none
Markings	fluorescent
Power	3½ inches of mercury vacuum
Vacuum connections	three ¼-inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-6050

SPECIFICATIONS:

Detail	AN-GG-I-496
Superseded	94-27963

MANUFACTURER: Sperry Gyroscope Company, Incorporated.

MANUFACTURER'S PART AND DRAWING NUMBER: 647910

AN DRAWING NUMBER: AN5735

AN PART NUMBER: AN5735-2

A. S. C. STOCK NUMBER: 6000198050

TECHNICAL ORDER NUMBER: 05-20-10

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

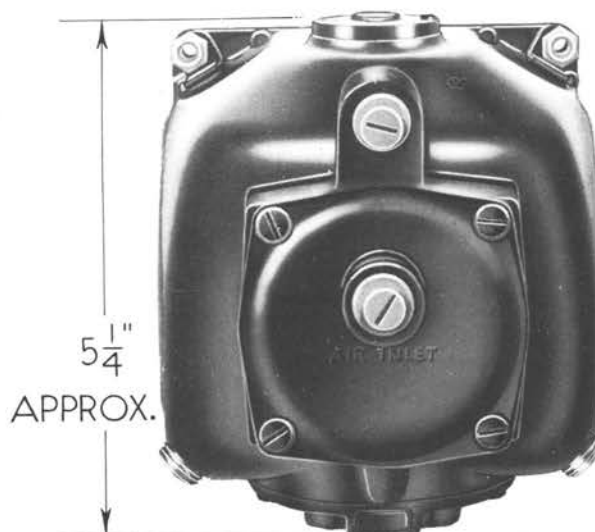
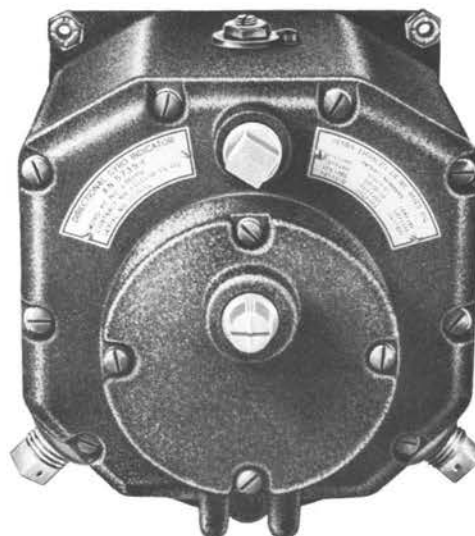
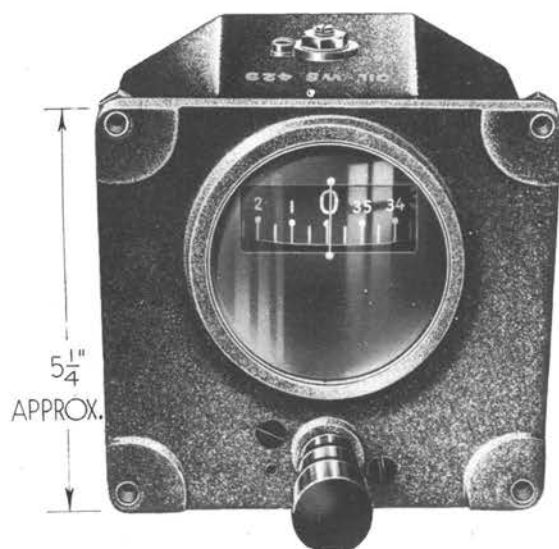
SPECIFICATIONS:

Detail	AN-GG-I-496
Superseded	Bureau of Aeronautics SQ-88, SQ-13

AN DRAWING NUMBER: AN5735

F. S. S. C. STOCK NUMBER: 88-I-969

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.



INDICATOR—DIRECTIONAL GYRO

AN5735-1 FORMER ARMY TYPE A-5 FORMER NAVY MARK 1-A
F.S.S.C. NUMBERS 88-I-965, 88-I-970, 88-I-1000

NAMES: Directional gyro indicator
Turn indicator

Gyro directional indicator

DESCRIPTION: This unit is equipped with a vacuum-driven gyroscope with its operating range limited to 55 degrees climb, dive, or bank. It is mounted on the instrument panel in the pilot's compartment and connected through a vacuum gage and selector valve to a source of vacuum, either an engine driven air pump or a venturi pump. Early models were furnished with a ball type inclinometer bank indicator.

(Continued on page 235)

INDICATOR—DIRECTIONAL GYRO

(Continued from page 234)

CHARACTERISTICS:

Dimensions approximately 4½ by 5¼ by 7 inches
 Weight approximately 4¼ pounds
 Air filter individual or central
 Illumination none
 Markings fluorescent, radio-active
 Power 3½ inches of mercury vacuum
 Vacuum connections three ¼ inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-6000

SPECIFICATIONS:

Detail AN-GG-I-496
 Superseded 94-27963

AN DRAWING NUMBER: AN5735

AN PART NUMBER: AN5735-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail AN-GG-I-496
 Superseded Bureau of Aeronautics SQ-88, SQ-13

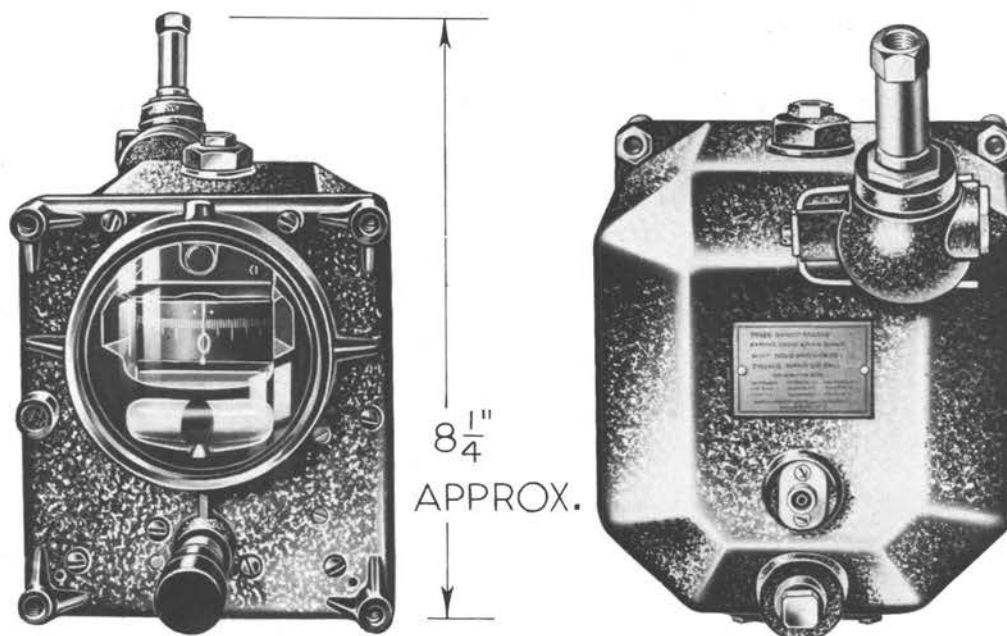
AN DRAWING NUMBER: AN5735 former N. A. F. 39972

F. S. S. C. STOCK NUMBER: Refer to chart.

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Federal Standard Stock Catalog Number	British Reference Number	Current Model (X)	Remarks
Sperry Gyroscope Co., Inc.	641362	N-B-C			88-I-1000	106A/687		Has ball inclinometer. Former F. S. S. C. Number 88-I-385.
	644730	A-N-B-C	6000236295 6000236290	05-20-4	88-I-970	106A/688		Has ball inclinometer.
	646050	A-N-B-C	6000198085	05-20-10	88-I-970	106A/690	X	
Jack & Heintz, Inc.	JH5500	A-N-B	6000198075		88-I-970	106A/690	X	
Ternstedt Manufacturing Division	T95090-1	A-N-B	6000198100	05-20HB-1	88-I-970	106A/690	X	
Electric Auto-Lite Co.	AL4000	N-B			88-I-965	106A/690	X	



INDICATOR—DIRECTIONAL GYRO ARMY TYPE B-3

NAMES: Directional gyro indicator
Turn indicator

Gyro directional indicator

DESCRIPTION: The Army type B-3 directional gyro indicator is equipped with a vacuum-driven gyroscope. The dial includes a ball bank inclinometer. This unit, mounted on the instrument panel in the pilot's compartment, is connected through a vacuum gage and selector valve to a source of vacuum, either an engine driven air pump or a venturi tube. A connector is provided on the rear of the case for attaching the flexible cable when a remote indicator turn control is used with the instrument.

CHARACTERISTICS:

Dimensions	approximately 4½ by 6 by 8¼ inches
Weight	approximately 5 pounds
Air filter	individual or central
Illumination	3 volt dial lamp
Markings	fluorescent radio-active
Power	vacuum—4 inches of mercury
Vacuum connection	one ¼ inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-7700

SPECIFICATIONS:

Detail	94-27801
Superseded	27801

MANUFACTURER: Sperry Gyroscope Co.

MANUFACTURER'S PART AND DRAWING NUMBER: 642919

TYPE DESIGNATION: B-3

A. S. C. STOCK NUMBER: 6000237750

TECHNICAL ORDER NUMBER: 05-20-4

PRODUCTION STATUS: Not under procurement for initial installation.

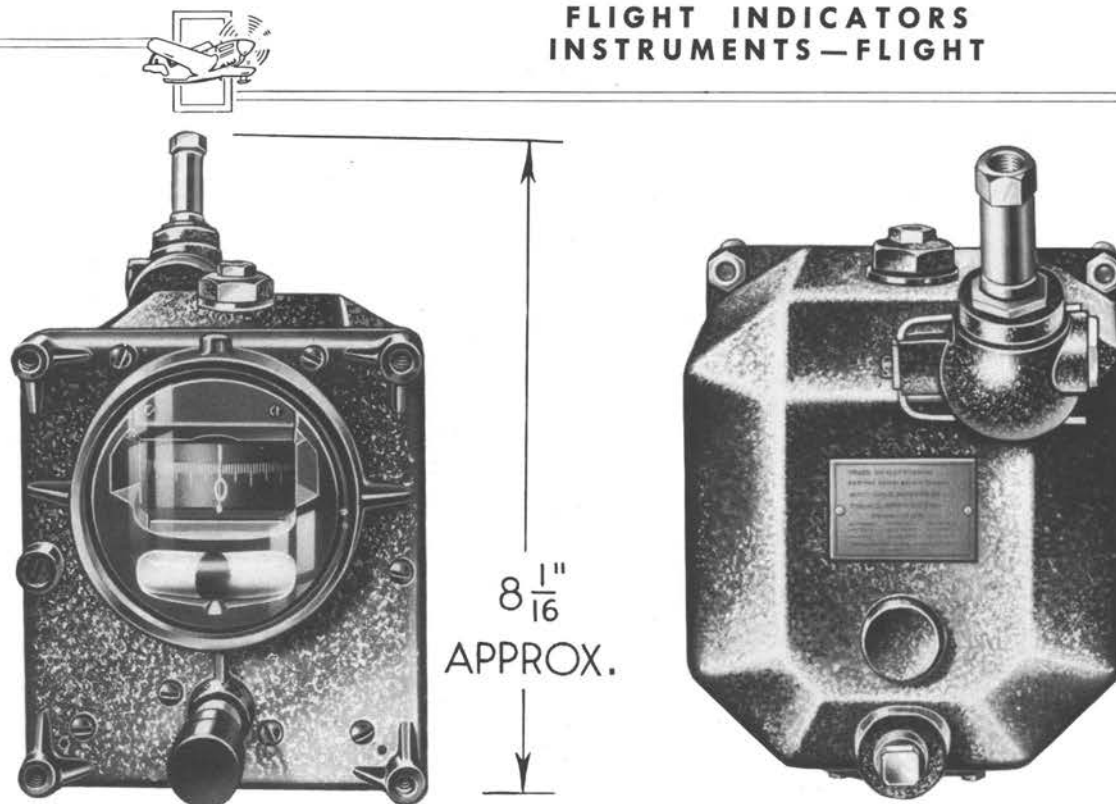
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/638



INDICATOR—DIRECTIONAL GYRO
ARMY TYPE B-4

NAMES: Directional gyro indicator
Flight indicator
Directional gyro turn indicator

Turn indicator
Gyro directional indicator
Indicator—turn

DESCRIPTION: The Army type B-4 directional gyro indicator is equipped with a vacuum driven gyroscope. The dial includes a ball-bank inclinometer. This unit, mounted on the instrument panel in the pilot's compartment, is connected through a vacuum gage and selector valve to a source of vacuum, either an engine driven air pump or a venturi tube. A connector is provided on the rear of the case for attaching the flexible shaft when a remote indicator turn control is used with the instrument.

CHARACTERISTICS:

Dimensions	approximately 4½ by 6⅛ by 8⅛ inches
Weight	approximately 4¾ pounds
Air filter	individual or central
Illumination	none
Markings	fluorescent, radioactive
Power	4 inches of mercury vacuum
Vacuum connections	one ¼ inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-7800

SPECIFICATIONS:

Detail	94-27964-B
Superseded	94-27964-A

MANUFACTURER: Sperry Gyroscope Company, Inc.

MANUFACTURER'S DRAWING AND PART NUMBER: 644772

TYPE DESIGNATION: B-4

A. S. C. STOCK NUMBER: 6000238090

TECHNICAL ORDER NUMBER: 05-20-4

PRODUCTION STATUS: Under procurement.

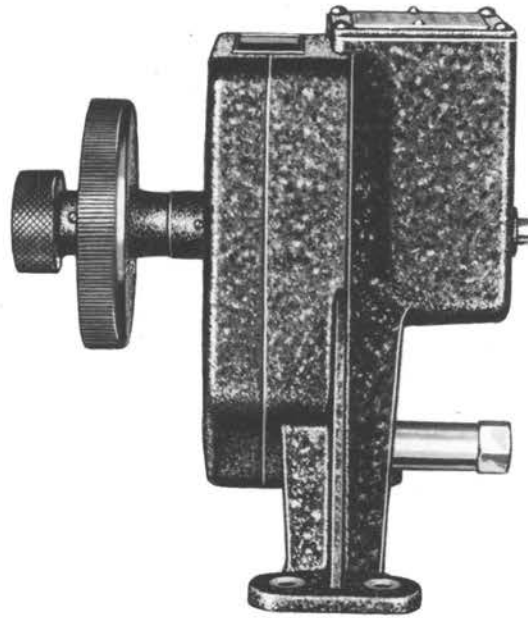
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/689



CONTROL—TURN (REMOTE INDICATOR)

B-4

NAMES: Turn control (Remote Indicator)
Turn control
Turn controller
Control unit

Remote controller
Turn (indicator control unit)
Remove indicator control
Controller assembly

DESCRIPTION: This unit is used in order to remotely set the card of the pilot's turn indicator. The turn control contains an indicator card similar to that in the turn indicator. The navigator can indicate to the pilot the course to be flown by using the control. It is mounted remote from the pilot's compartment, and is connected by flexible shaft to the turn indicator, Army type B-4, A. E. Reference Number 60-7800.

CHARACTERISTICS:

Dimensions	approximately 5 $\frac{5}{16}$ by 5 $\frac{1}{4}$ by 5 $\frac{3}{16}$ inches
Weight	approximately 1 $\frac{3}{4}$ pounds
Dial range	0 to 45 degrees, right or left turn
Markings	1 degree graduation, fluorescent
Illumination	none

ARMY

A. E. REFERENCE NUMBER: 60-2000

SPECIFICATIONS:

Detail	94-27964-B (part of)
Superseded	94-27964-A

MANUFACTURER: Sperry Gyroscope Company, Inc.

MANUFACTURER'S PART AND DRAWING NUMBER: 644887; Outline Drawing Number 150774

TYPE DESIGNATION: B-4

A. S. C. STOCK NUMBER: 6000100350

TECHNICAL ORDER NUMBER: 05-20-4

PRODUCTION STATUS: Under procurement.

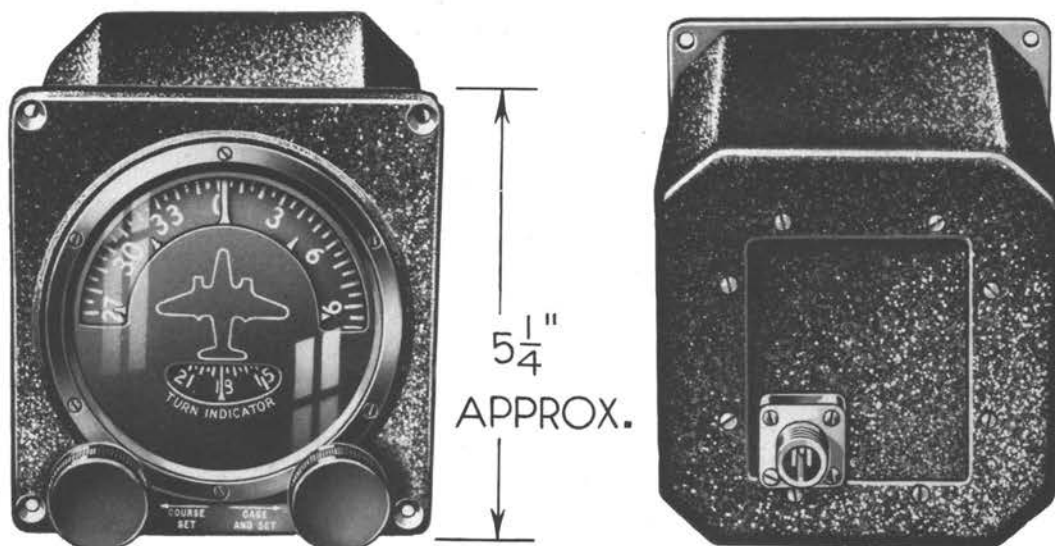
SHIPPING DATA: Shipped as a unit complete with flexible shaft.

NAVY

There is no Navy equivalent for this item.

BRITISH

BRITISH REFERENCE NUMBER: 106J/673



INDICATOR—DIRECTIONAL GYRO

ARMY TYPE C-1 F.S.S.C. NUMBER 88-I-1005

NAMES: Directional gyro indicator
Turn indicator

Gyro directional indicator

DESCRIPTION: The type C-1 directional gyro indicator is equipped with an electrically driven gyro. This unit, mounted on the instrument panel in the pilot's compartment, is connected to the source of power through a receptacle in the case. Through use of a gear arrangement, the indicator dial card is mounted vertically, rather than horizontally.

CHARACTERISTICS:

Dimensions	approximately 5 by 5 1/4 by 6 1/2 inches
Weight	approximately 5 pounds
Illumination	none
Markings	fluorescent, radioactive
Power	alternating current 115 volt, 3 phase, 400 cycle

ARMY

A. E. REFERENCE NUMBER: 60-6100

SPECIFICATIONS:

Detail	27393-A
Superseded	27393

TYPE DESIGNATION: C-1

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

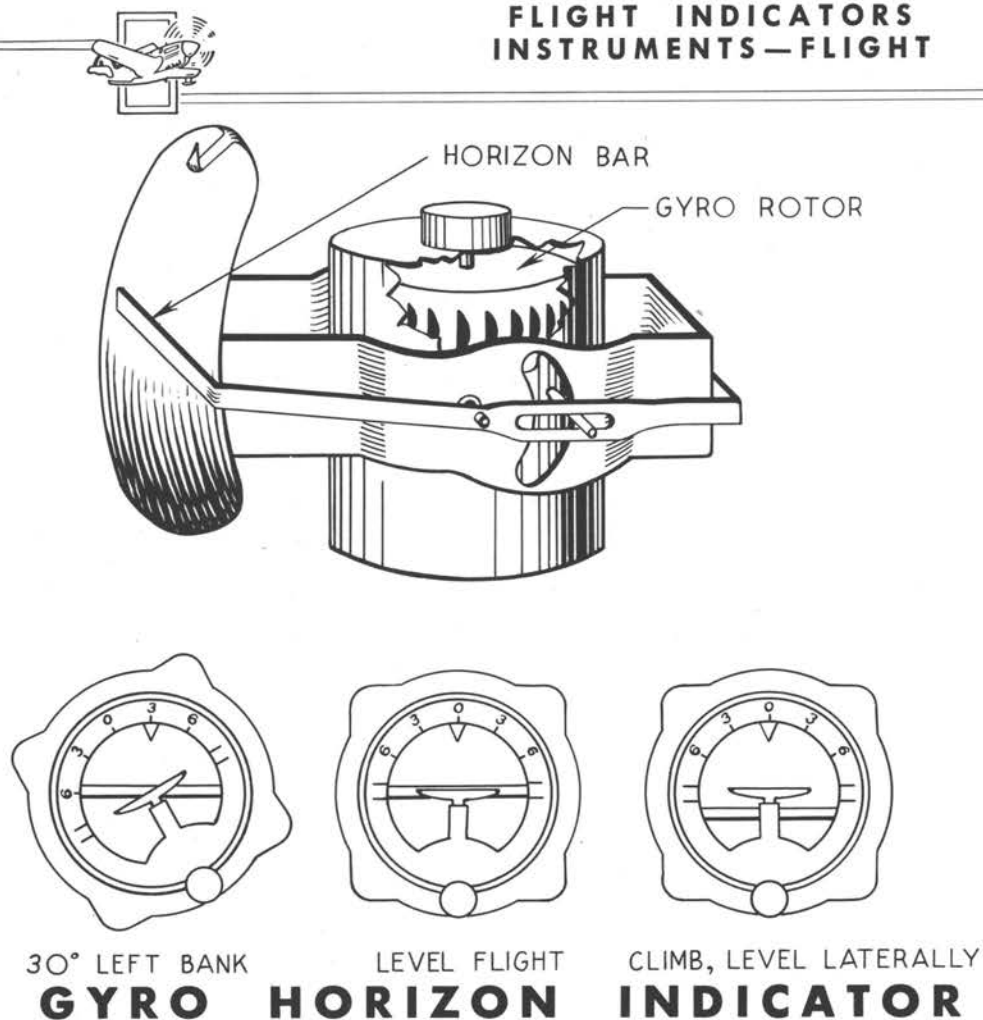
NAVY

F. S. S. C. STOCK NUMBER: 88-I-1005

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
Sperry Gyroscope Co., Inc.	657069	A-N-B-C		106A/1435
General Electric Co.	8KC1AC1	A-N-B	6000218580	106A/1435



The gyro horizon indicator, also known as the flight indicator or artificial horizon indicator, provides the pilot with visual indication of the altitude of the airplane in relation to the horizon. It is also used to maintain the proper glide angle during instrument landing approaches, and to measure the amount of bank when making precision turns.

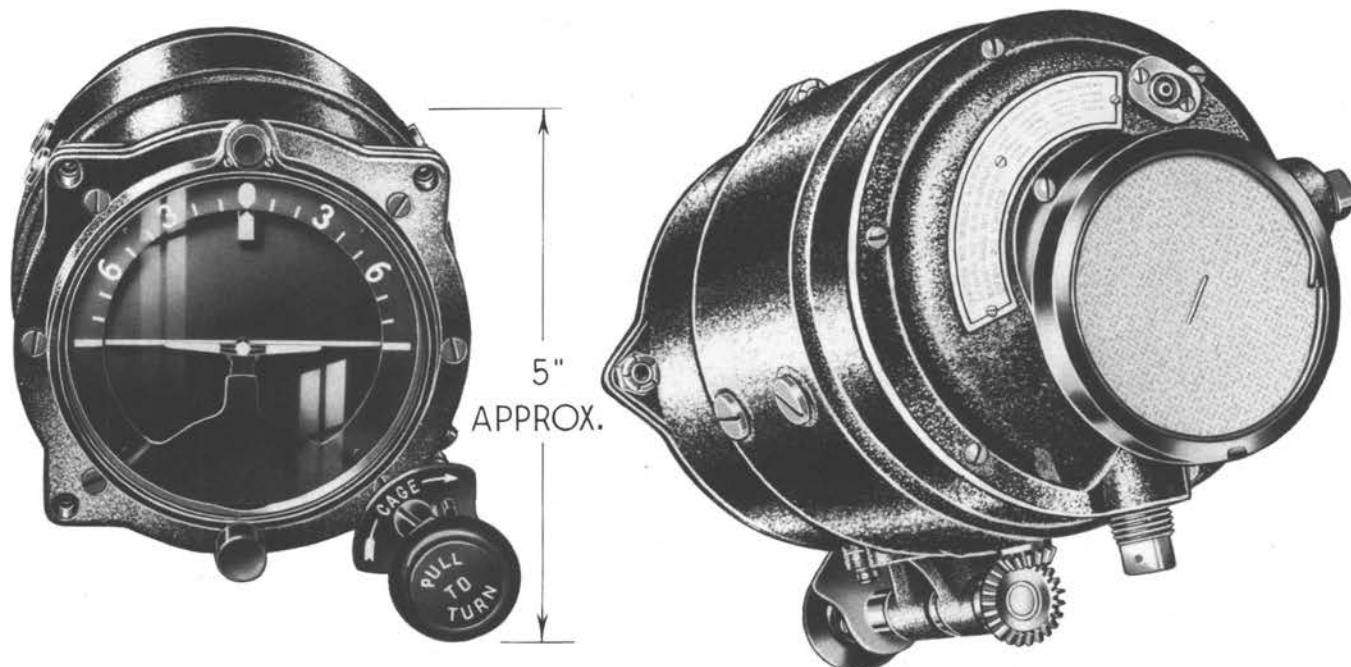
The instrument consists principally of a gyroscope, either vacuum or electrically driven, with axle mounted and maintained vertical.

The dial face, which is fixed to the instrument case, consists of two parts—a miniature rear view outline of an airplane, and a banking indicator, graduated from zero to ninety degrees, right and left bank.

When the airplane moves so that the nose is above or below the actual horizon, an horizon bar pivoted to the gyro shows below or above the miniature airplane.

When the airplane banks, a hand, attached to one of the gyro supporting rings, points to the degree of bank on the fixed dial face, and shows whether the bank is left or right.

A knob provides for “caging” the instrument, which is necessary when aligning the gyro or, during violent maneuvers, to prevent damage to the instrument.



INDICATOR—GYRO HORIZON

ARMY TYPE C-5

NAMES: Gyro horizon indicator
Artificial horizon

Flight indicator

DESCRIPTION: The Army type C-5 gyro horizon indicator has a vacuum driven gyroscope, and an individual air filter. It is illuminated by an individual 3 volt dial lamp. No resistor is provided for the lamp. Some of these indicators have a single horizon bar, while others have a double bar.

CHARACTERISTICS:

Dimensions	approximately 5 by 5 by 7¼ inches
Weight	approximately 4½ pounds
Illumination	3 volt dial lamp, no resistor
Markings	fluorescent, radioactive
Power	3½ inches of mercury vacuum
Vacuum connections	two, ¼ inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-5600

SPECIFICATIONS:

Detail	94-27802
Superseded	27802-A

TYPE DESIGNATION: C-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

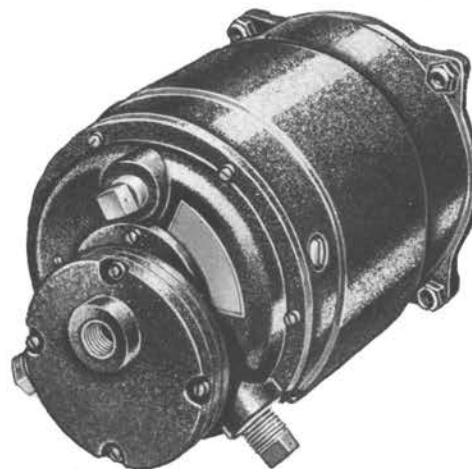
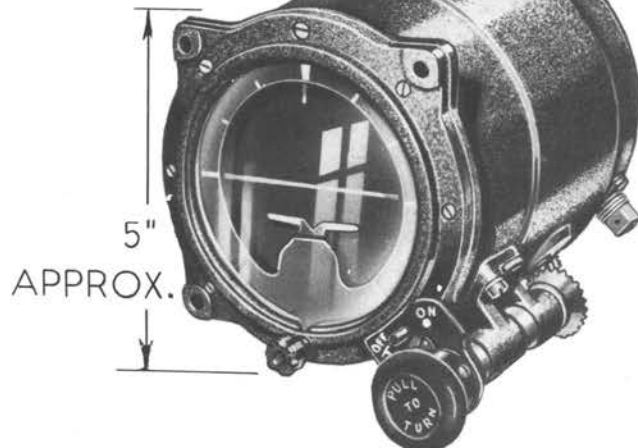
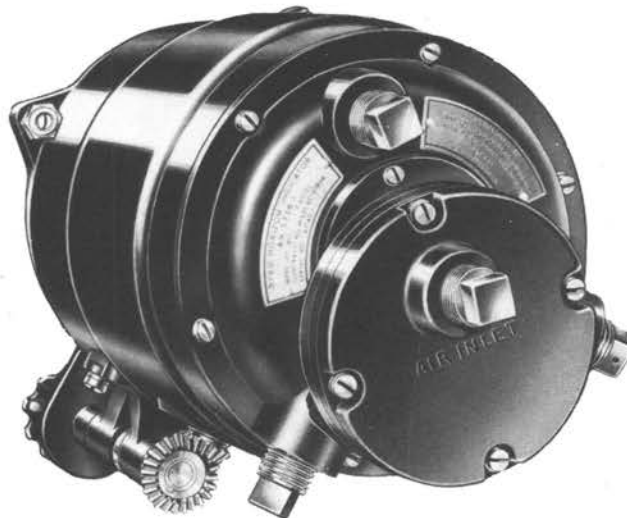
There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

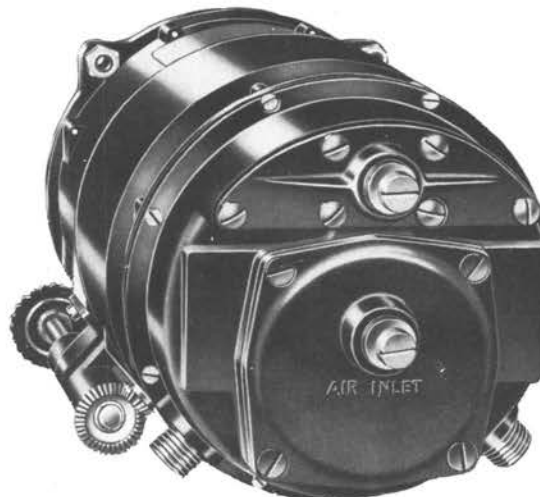
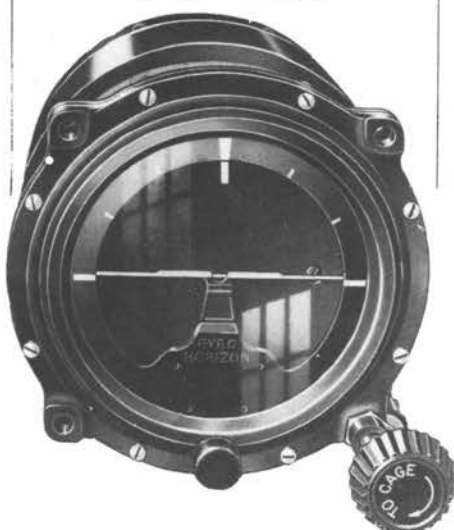
Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Current Model X	Remarks
Sperry Gyroscope Co., Inc.	642921	A-B-C	6000207000	05-20-3	106A/634		Double horizon bar.
	643770	A-B-C	6000207250	05-20-3	106A/634	X	Single horizon bar.



5" APPROX.



5" APPROX.



INDICATOR—GYRO HORIZON

AN5736-1 FORMER ARMY TYPE C-7 F.S.S.C. NUMBER 88-I-1350

NAMES: Gyro horizon indicator
Artificial horizon

Flight indicator

(Continued on page 243)

INDICATOR—GYRO HORIZON

(Continued from page 242)

DESCRIPTION: This gyro horizon indicator is powered by a vacuum driven gyroscope. It is not illuminated.

CHARACTERISTICS:

Dimensions.....refer to chart
Weight.....refer to chart
Air filter.....individual or central
Illumination.....none
Markings.....fluorescent, radioactive
Power.....3 1/2 inches of mercury vacuum
Vacuum connections.....two, 1/4 inch internal pipe threads

ARMY

A. E. REFERENCE NUMBER: 60-5800

SPECIFICATIONS:

Detail.....AN-GG-I-506
Superseded.....94-27962-A

AN DRAWING NUMBER: AN5736

AN PART NUMBER: AN5736-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....AN-GG-I-506
Superseded.....Bureau of Aeronautics SQ-90 and SE-14

AN DRAWING NUMBER: AN5637

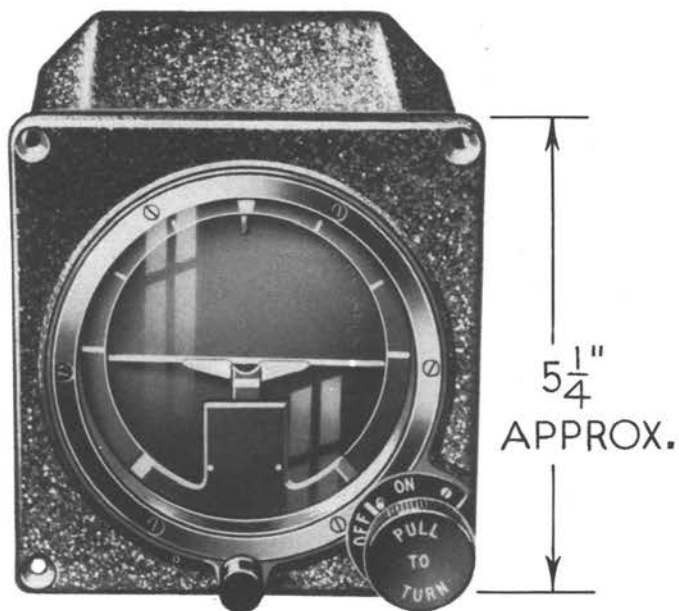
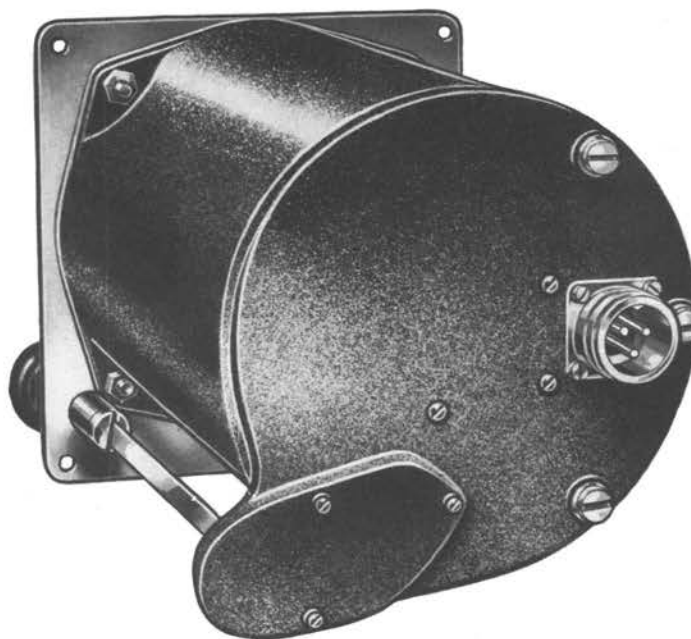
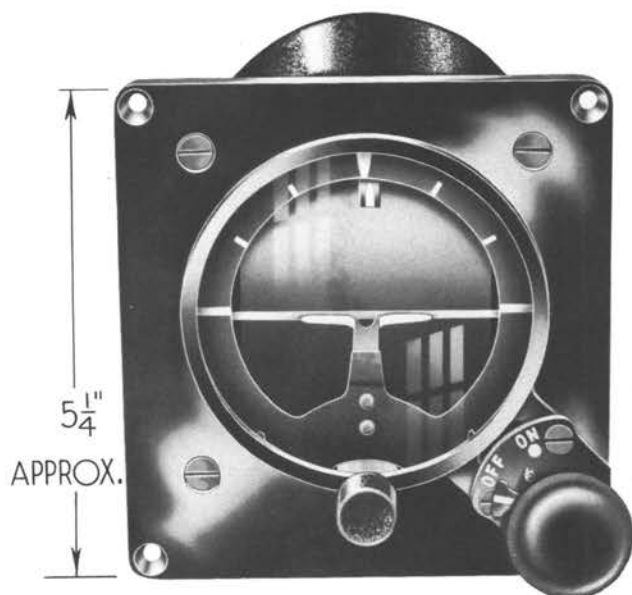
AN PART NUMBER: AN5736-1

F. S. S. C. STOCK NUMBER: 88-I-1350

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 6
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Dimensions Approximately— Inches	Weight Approximately— Pounds	Current Model (X)	Used By	Army Technical Order Number	Air Service Command Stock Number	British Reference Number
Sperry Gyroscope Co., Inc.	644729	5 by 5 by 7 1/2	4-3/5		A-N-B-C	05-20-3	6000207580	106A/697
	645391	5 by 5 by 8	4-3/5		A-N-B-C	05-20-3	6000207585	106A/697
	646040	5 by 5 by 7 1/2	4-3/5	X	A-N-B-C	05-20-9	6000218700	106A/700
Jack & Heintz, Inc.	JH6500	5 by 5 by 8 1/16	2-4/5	X	A-N-B	05-20-9	6000218500	106A/700
Ternstedt Manufacturing Division	T95100	5 by 5 by 7 1/2	4-3/5	X	AN--B	02-20-9	6000218750	106A/700
C. G. Conn Co.	646040	5 by 5 by 7 1/2	4-3/5	X	A-N-B	05-20-9	6000218700	106A/700



INDICATOR—GYRO HORIZON

ARMY TYPE E-1

NAVY—SEE NEXT PAGE

F.S.S.C. NUMBER 88-I-1357

NAMES: Gyro horizon indicator
Artificial horizon

Flight indicator

DESCRIPTION: The Army type E-1 gyro horizon indicator is operated by an electrically-driven gyroscope. It is mounted on the instrument panel, and is connected to the electrical supply through a receptacle on the instrument case.

(Continued on page 245)



INDICATOR—GYRO HORIZON

(Continued from page 244)

CHARACTERISTICS:

Dimensions.....approximately 5¼ by 5¼ by 8½ inches
 Weight.....approximately 5 pounds
 Illumination.....none
 Markings.....fluorescent, radioactive
 Power.....alternating current, 115 volts, 3 phase,
 400 cycle

ARMY

A. E. REFERENCE NUMBER: 60-5900

SPECIFICATIONS:

Detail.....27394-A
 Superseded.....27394

TYPE DESIGNATION: E-1

A. S. C. STOCK NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

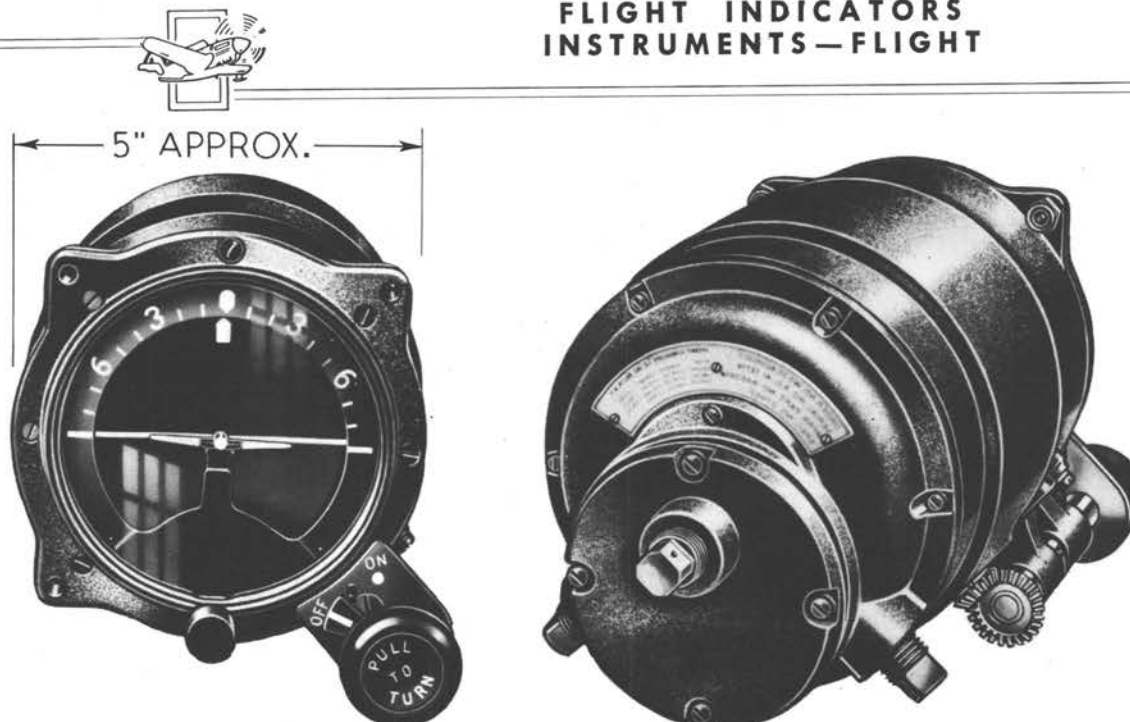
NAVY

F. S. S. C. STOCK NUMBER: 88-I-1357

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	British Reference Number
General Electric Co.	KB-1	8-KB-1AC-1	A-N-B	6000218575	106A/1417
Sperry Gyroscope Co., Inc.		657070	A-N-B-C	6000207875	106A/1417



INDICATOR—GYRO HORIZON

AN5736-2 FORMER ARMY TYPE C-7 F.S.S.C. NUMBER 88-I-1345

NAMES: Gyro horizon indicator
Artificial horizon indicator

Flight indicator

DESCRIPTION: This gyro horizon indicator is powered by a vacuum driven gyroscope. It is not illuminated. Its dial is marked with fluorescent material so that it may be used in night fighters.

CHARACTERISTICS:

Dimensions	approximately 5 by 5 by 7½ inches
Weight	approximately 4⅓ pounds
Illumination	none
Markings	fluorescent
Power	3½ inches of mercury vacuum
Vacuum connections	two ¼ inch internal pipe thread

ARMY

A. E. REFERENCE NUMBER: 60-5850

SPECIFICATIONS:

Detail	AN-GG-I-506
Superseded	94-27962-A

AN DRAWING NUMBER: AN5736

AN PART NUMBER: AN5736-2

MANUFACTURER: Sperry Gyroscope Co.

MANUFACTURER'S PART AND DRAWING NUMBER: 647900

A. S. C. STOCK NUMBER: 6000218550

TECHNICAL ORDER NUMBER: 05-20-9

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail	AN-GG-I-506
Superseded	Bureau of Aeronautics SQ-90 and SE-14

AN DRAWING NUMBER: AN5736

AN PART NUMBER: AN5736-2

F. S. S. C. NUMBER: 88-I-1345

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1434



INDICATOR—TURN AND BANK

The turn and bank indicator is a flight instrument used by the pilot as an aid in making precision turns at a predetermined rate.

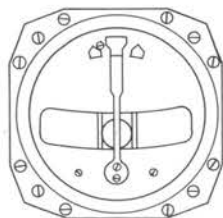
The instrument consists of a turn reference and a bank reference in a single case. The turn reference, or indicator, shows the direction and rate at which the airplane is turning about a vertical axis.

Operation of the turn indicator is based upon the principle of precession in a gyroscope. The gyroscope is a wheel turning on its axle and powered by a small electric motor, or by air pressure. Air or vacuum is provided, either by an engine operated pump, a venturi tube mounted in the air stream, or by suction from the engine manifold. The gyroscope is mounted horizontally, with its axis perpendicular to the direction of flight. When the airplane changes its direction, the gyroscope tends to turn in a direction at right angles to the longitudinal or fore and aft axis of the ship. This is known as precession. This motion of the gyroscope is restrained by a spring.

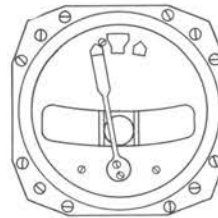
The instrument indicates the rate of turn by the degree of movement of a hand on the dial face, so attached that it moves with the precession of the gyro. In addition to restraining the motion of the gyro, the spring mentioned in the preceding paragraph restores the gyro to its centered position after the turn has been completed.

The bank indicator consists of a spirit level containing a ball of metal or glass in a tube filled with compass liquid. In straight flight, the ball remains in the center of the tube. In a properly executed banked turn, the ball also remains in the center of the tube. Movement of the ball away from the center of the tube indicates that the airplane is slipping or skidding.

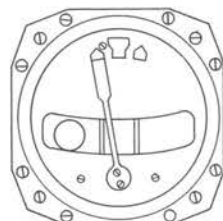
INDICATOR READINGS FOR SEVERAL CONDITIONS OF TURN AND BANK



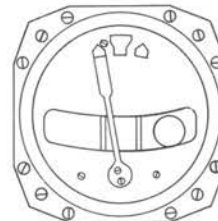
STRAIGHT AND LATERALLY LEVEL FLIGHT



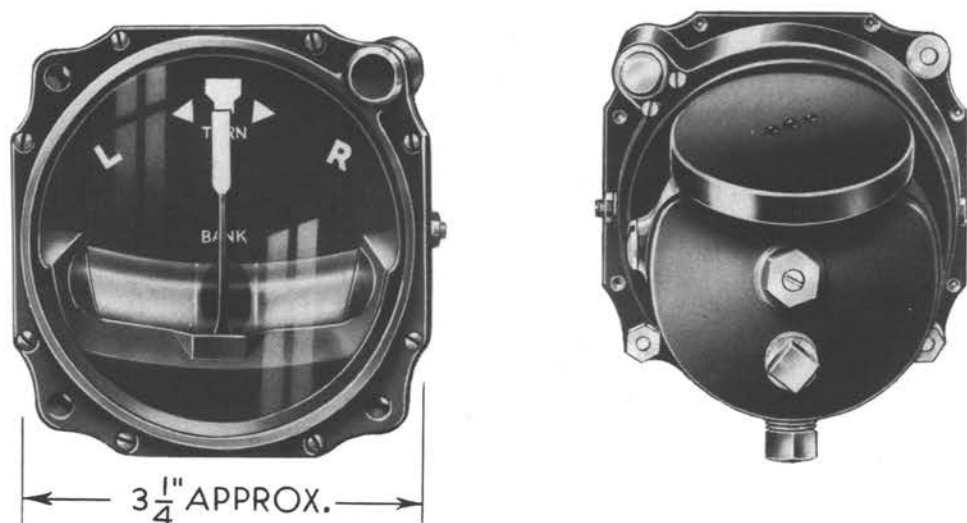
LEFT TURN PROPERLY BANKED



LEFT TURN SLIPPING INWARD



LEFT TURN SKIDDING OUTWARD



INDICATOR—TURN AND BANK

ARMY TYPE A-5

NAMES: Turn and bank indicator

Bank and turn indicator

DESCRIPTION: The Army type A-5 turn and bank indicator is an individually lighted instrument operated by a vacuum driven gyroscope. It uses an individual air filter.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 5 3/8 inches
Weight	approximately 1 2/5 pounds
Deflection	5/32 inch for 180 degrees turn per minute
Illumination	3-volt rim light
Markings	fluorescent radioactive
Power	26 inches of water vacuum
Vacuum connections	two 1/8-inch internal pipe thread

RELATIONSHIP OF PARTS: Used with:

Turn and bank indicator air filter, A. E. Reference Number 60-2300. If a central air filter installation is provided in the airplane, connection can be made by using an adapter, A. A. F. drawing number 42A7905.

ARMY

A. E. REFERENCE NUMBER: 60-5000

SPECIFICATIONS:

Detail	94-27803
Superseded	27803-A

TYPE DESIGNATION: A-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for this item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	1703	1703-2A-B2	A-B-C	6000193250	05-20-2	106A/415
	1703	1703-A2	A-B-C	6000193500	05-20-2	106A/415
	1707	1707-2A-A2	A-B-C	6000193750	05-20-2	106A/415
	1707	1707-1A-A1	A-B-C	6000193625	05-20-2	106A/88



INDICATOR—TURN AND BANK

ARMY TYPE A-8 F.S.S.C. NUMBER 88-I-3280

NAMES: Turn and bank indicator

Bank and turn indicator

DESCRIPTION: The Army type A-8 turn and bank indicator is operated by a vacuum driven gyroscope. It uses an individual air filter. It is not illuminated.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 5 7/32 inches
Weight	approximately 1 1/2 pounds
Deflection	5/32 inch for 180 degrees turn per minute
Illumination	none
Markings	fluorescent, radioactive
Power	26 inches of water vacuum
Vacuum connections	two 1/8-inch internal pipe thread

RELATIONSHIP OF PARTS: Used with:

Turn and bank indicator air filter, A. E. Reference Number 60-2300. If a central air filter installation is provided in the airplane, connection can be made by using an adapter, A. A. F. drawing number 42A7905.

ARMY

A. E. REFERENCE NUMBER: 60-5200

SPECIFICATIONS:

Detail	94-27955
Superseded	27955

TYPE DESIGNATION: A-8

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail	SQ-84A
Superseded	SQ-84

BUAER DRAWING NUMBER: 845-SK

F. S. S. C. STOCK NUMBER: 88-I-3280

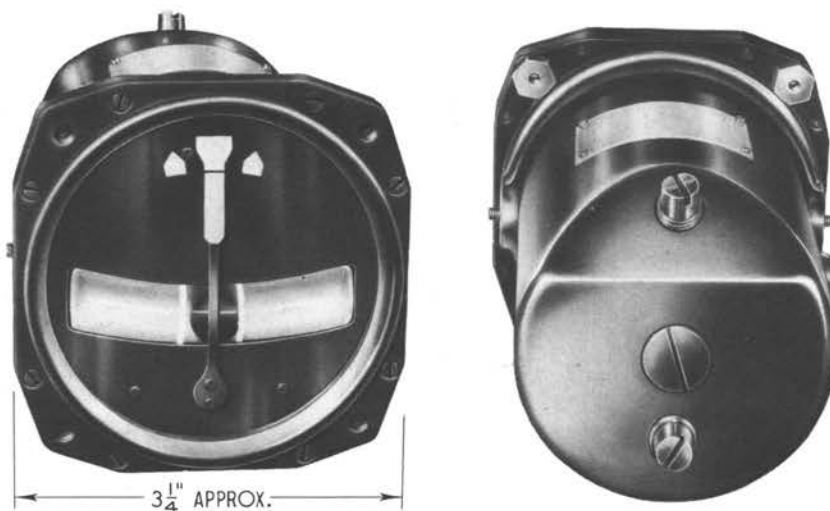
PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	1718	1718-2S-A2	A-B-C	6000194770	05-20-2	106A/850
	1718	1718-1A-A1	A-B-C	6000194765	05-20-2	106A/850
	1719	1719-1AF-A1	N-B			106A/978



FLIGHT INDICATORS INSTRUMENTS—FLIGHT



INDICATOR—TURN AND BANK

AN5820-1 FORMER ARMY TYPE A-11 F.S.S.C. NUMBER 88-I-3255

NAMES: Turn and bank indicator

Bank and turn indicator

DESCRIPTION: This turn and bank indicator is operated by a vacuum driven gyroscope. It is not illuminated.

CHARACTERISTICS:

Dimensions.....approximately 3 1/4 by 3 1/4 by 4 7/8 inches
 Weight.....approximately 1 3/4 pounds
 Deflection.....5/32 inch for 180 degrees turn per minute
 Markings.....fluorescent—radioactive
 Power.....2 inches of mercury vacuum
 Vacuum connections.....two; 1/8-inch internal pipe thread

RELATIONSHIP OF PARTS: When airplane installation does not include vacuum operated instrument air filter, individual filter, A. E. Reference Number 60-2300, must be provided.

ARMY

A. E. REFERENCE NUMBER: 60-5400

SPECIFICATIONS:

Detail.....AN-GG-I-525
 Superseded.....94-27348

AN DRAWING NUMBER: AN5820

AN PART NUMBER: AN5820-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-20-2

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....AN-GG-I-525
 Superseded: Bureau of Aeronautics.....SQ-84

AN DRAWING NUMBER: AN5820

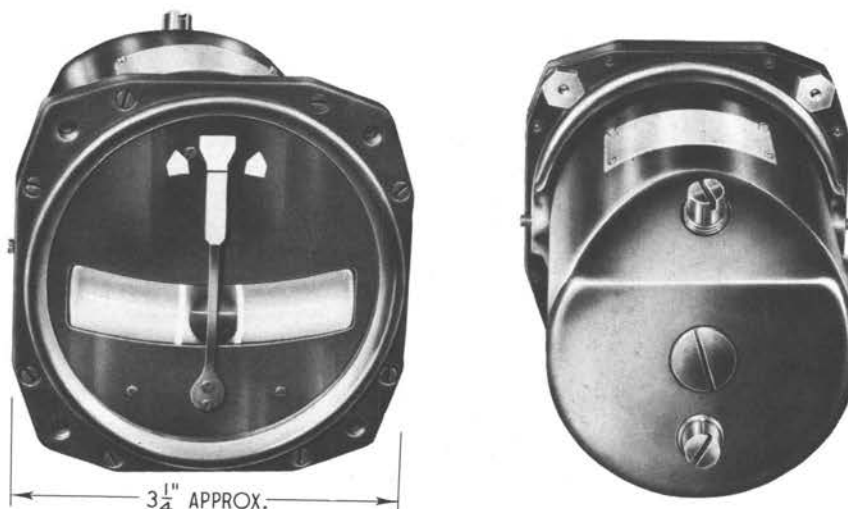
AN PART NUMBER: AN5820-1

F. S. S. C. STOCK NUMBER: 88-I-3255

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Pioneer Instrument Division	1721	1721-2U-A2	A-N-B-C	6000194925	05-20-2	106A/1116	
	1722	1722-2V-A2	A-N-B-C	6000195000	05-20-2	106A/1116	
	1722	1722-2X-A2	A-N-B	6000195200	05-20-2	106A/1373	Fluorescent markings only.
Burton Manufacturing Co.	1721	1721-2U-A2B	A-N-B	6000194935	05-20-2	106A/1116	
Longines Wittnauer Watch Co.	1940	1940	A-B	6000194950	05-20-2	106A/1116	



INDICATOR—TURN AND BANK

AN5820-2 FORMER ARMY TYPE A-12 F.S.S.C. NUMBER 88-I-3250

NAMES: Turn and bank indicator

Bank and turn indicator

DESCRIPTION: This turn and bank indicator is operated by a vacuum driven gyroscope. It is not illuminated, and all markings are of fluorescent material, since this instrument is intended for use on night fighters.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 4 7/8 inches
Weight.....	approximately 1 3/4 pounds
Deflection.....	5/32 inch for 180 degrees turn per minute
Illumination.....	None
Markings.....	fluorescent
Power.....	21 inches of mercury vacuum
Vacuum connections.....	two 1/8-inch internal pipe thread

RELATIONSHIP OF PARTS: When airplane installation does not include vacuum operated instrument air filter, individual filter, A. E. Reference Number 60-2300, must be provided.

ARMY

A. E. REFERENCE NUMBER: 60-5450

SPECIFICATIONS:

Detail.....	AN-GG-I-525
Superseded.....	94-27407

AN DRAWING NUMBER: AN5820

AN PART NUMBER: AN5820-2

MANUFACTURER: Pioneer Instrument Division of Bendix Aviation Corp.

MANUFACTURER'S DRAWING AND PART NUMBER: 1722-2X-A2

TECHNICAL ORDER NUMBER: 05-20-2

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....	AN-GG-I-525
Superseded.....	Bureau of Aeronautics, SQ-84

AN DRAWING NUMBER: AN5820

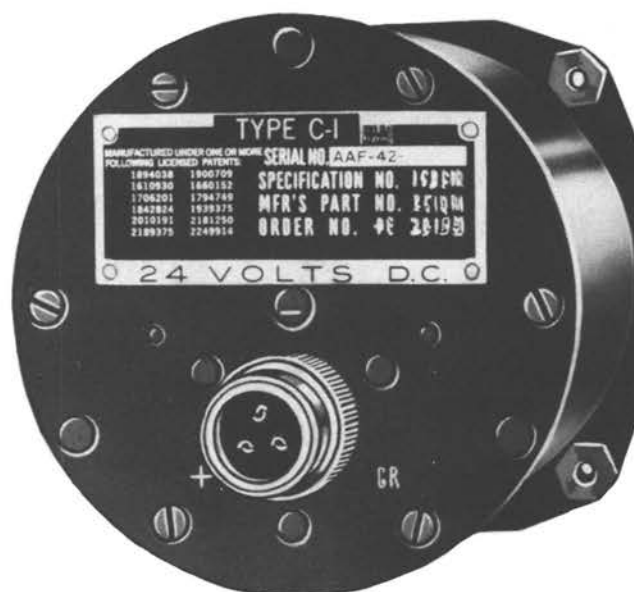
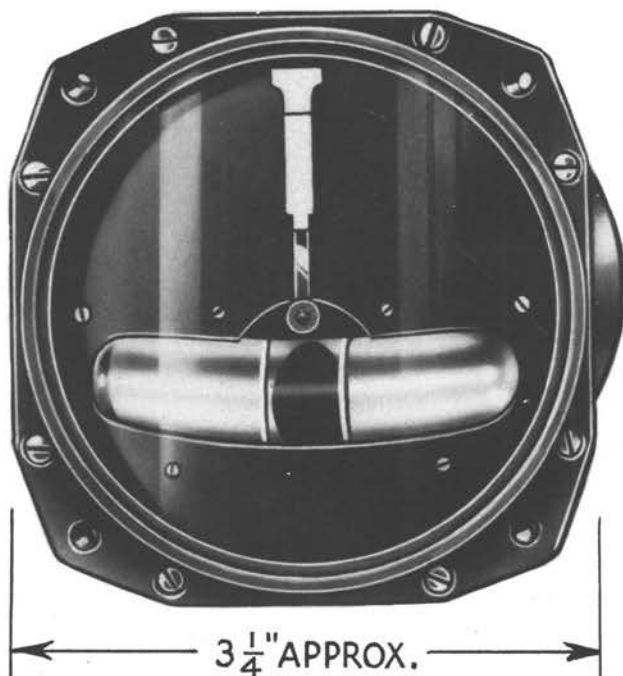
AN PART NUMBER: AN5820-2

F. S. S. C. STOCK NUMBER: 88-I-3250

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1373



INDICATOR—TURN AND BANK

ARMY TYPE C-1 F.S.S.C. NUMBER 88-I-3221

NAMES: Turn and bank indicator
Bank and turn indicator

DESCRIPTION: The Army type C-I turn and bank indicator is operated by an electrically actuated gyroscope. It is not illuminated.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 6 3/8 inches
Weight	approximately 1 1/4 pounds
Deflection	5/32 inch for 180 degrees turn per minute
Markings	fluorescent radioactive
Power	24 volts direct current

ARMY

A. E. REFERENCE NUMBER: 60-5500

SPECIFICATIONS:

Detail	94-27337
Superseded	27337-A

TYPE DESIGNATION: C-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS: Detail 94-27337 (Army Specification)

BUAER DRAWING NUMBER: 909-SK

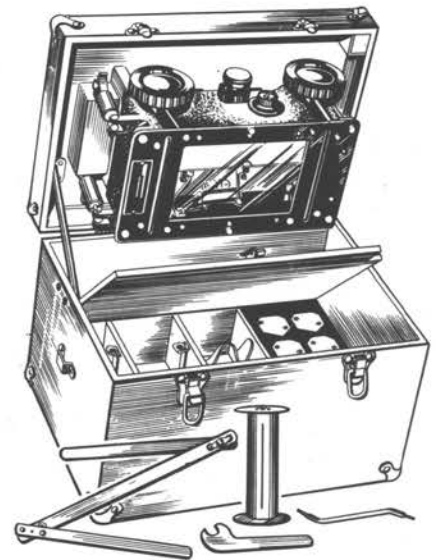
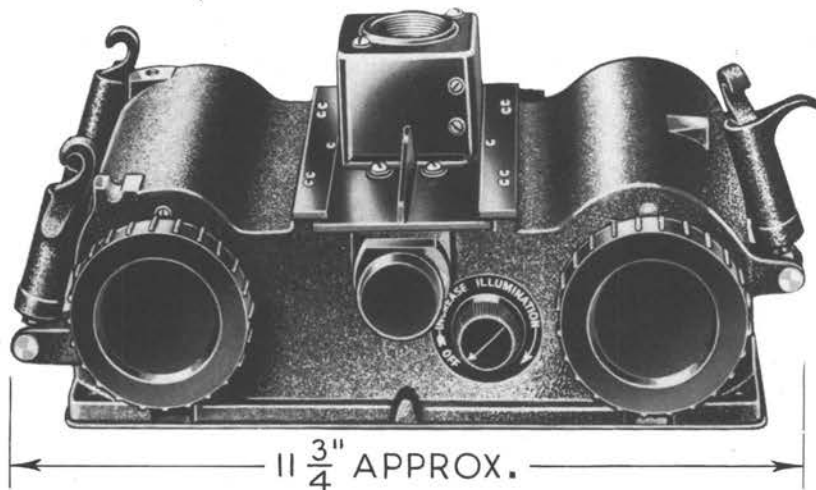
F. S. S. C. STOCK NUMBER: 88-I-3221

TECHNICAL ORDER NUMBER: 05-20AB-1 (Army Technical Order)

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	3904	3904-1B-A1	A-N-B-C	6000195850	05-20AB-1	106A/1363
Allen Calculator Co.	21500	21500	A-B	6000196000	05-20A-2	106A/1363
L. W. Schwein Engineering Co.	21500	21500	A-B	6000196000	05-20A-2	106A/1363



ASTROGRAPH ARMY TYPE A-1

NAMES: Astrograph—navigator

Astrograph assembly

DESCRIPTION: The astrograph is an instrument used to quickly and accurately determine the airplane's position during flight, with reference to the stars. The instrument contains a film with a representation of the heavens. This representation is projected onto a chart on the navigator's table by a lamp contained within the instrument. When used in connection with data obtained from an almanac, the instrument is used to obtain the location of the airplane on the chart.

The original installation can be made at a height of 22 $\frac{1}{10}$ " above the chart, or at a distance of 16 $\frac{3}{10}$ ". Specially designed folding gages are used to measure this distance. When the installation is made, a lamp to suit the particular height must be selected. Four lamps are furnished with the instrument; one lamp and spare for each mounting height.

Charts and film are not included, and must be obtained separately. Spare glass plates, and wrenches for adjusting the height, are provided. Support is provided by the mounting ring described on page 254.

CHARACTERISTICS:

Dimensions (of case).....	approximately 14 $\frac{1}{2}$ by 11 by 10 inches
Dimensions (instrument).....	approximately 11 $\frac{3}{4}$ by 6 $\frac{1}{4}$ by 5 $\frac{1}{2}$ inches
Weight.....	approximately 5 $\frac{1}{2}$ pounds
Distance from bottom to table with long lamp.....	22 $\frac{1}{10}$ inches
Distance from bottom to table with short lamp.....	16 $\frac{3}{10}$ inches

ARMY

A. E. REFERENCE NUMBER: 60-1075

SPECIFICATIONS: Detail.....94-27404

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit, including accessories, but less film. Gross weight, approximately 15 $\frac{3}{4}$ pounds.

NAVY

TYPE DESIGNATION: A-1

SPECIFICATIONS: Detail.....Navy uses Army specification

F. S. S. C. STOCK NUMBER: 88-A-650

TECHNICAL DATA: BuAer Handbook of Aircraft Instruments—Chapter 8.

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

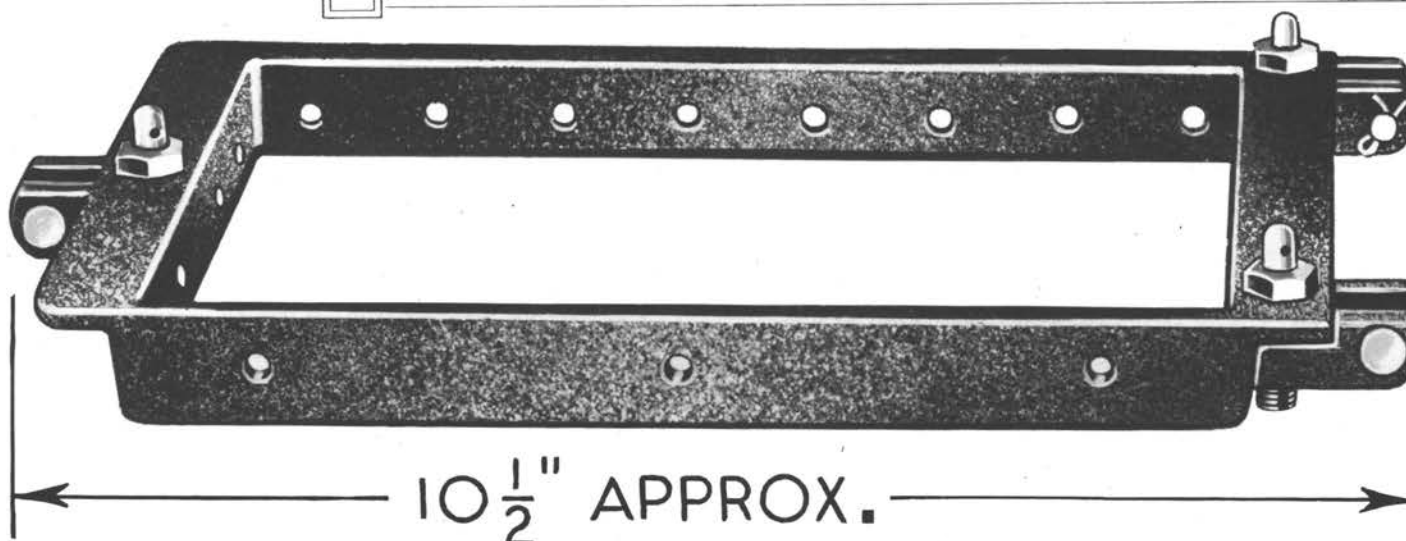
MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Eastman Kodak Co.	U-8144	U-8144	A-N-B	6200026050	05-35-19	106B/12
Sperti, Inc.	A-12	A-12	A-N-B	6200026075	05-35-19	106B/12

NOTE: British reference number for astrographs now manufactured in United Kingdom are:

6B/182 for Mark 1A (bottom 22.3 inches above table).

6B/183 for Mark 1B (bottom 16.3 inches above table).



RING—ASTROGRAPH MOUNTING

NAME: Astrograph mounting ring

DESCRIPTION: This is a metal rectangular ring used to mount and support the Army type A-1 astrograph. It is permanently mounted in the aircraft, and is furnished with an extra receptacle. British or American instruments may be mounted interchangeably on British or American mounting rings, but the electrical receptacle on the ring is not interchangeable.

CHARACTERISTICS:

Dimensions.....approximately 10 by 6½ by 1 inches
Weight.....approximately ¾ pound

ARMY

A. E. REFERENCE NUMBER: 60-1076

SPECIFICATIONS:

Detail.....94-27404
Superseded.....27404

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....approximately 7 by 11 by 1⅞ inches
Gross weight.....approximately 1 pound

NAVY

SPECIFICATIONS:

Detail.....Navy uses Army specification

F. S. S. C. NUMBER: 88-R-500

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Eastman Kodak Co.	U-8149	A-N-B	6200310625	05-35-19	106B/33
Sperti, Inc.	S-100	A-N-B	6200310615	05-35-19	106B/33

NOTE: British stores reference number is 6B/184.



← 2 ³/₈" APPROX. →

CLOCK—7 JEWEL—LIGHTED ARMY TYPE A-9

NAMES: 7 jewel lighted clock
Clock, type A-9 (aircraft—1 ⁷/₈ inch round dial)
Clock—8-day

Eight-day clock
Airplane clock
Navigation clock

DESCRIPTION: The Army type A-9 clock has a square flange and a vented aluminum case. The dial is provided with an individual bulb for illumination.

The clock has an eight-day movement and a sweep second hand. The winding knob is located in the lower left corner of the case.

CHARACTERISTICS:

Size.....round dial, 1 ⁷/₈ inches diameter
Weight.....approximately ³/₈ pound
Movement.....8-day, 7-jewel, stem wind, back ratchet and stem set
Dial markings.....radioactive luminous
Dial type.....12-hour

ARMY

A. E. REFERENCE NUMBER: 60-1100

SPECIFICATIONS:

General.....94-27220
Detail.....27879

TYPE DESIGNATION: A-9

A. S. C. STOCK NUMBER: 6000052750 (procurement stock number)

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Longines-Wittnauer Watch Co., Inc.	63EA	A-B	6000052500	05-1-9	106A/28	Single wire circuit, 3-volt rim lighting.
	63EAF	A-B	6000052510	05-1-9	106A/28	Single wire circuit, 3-volt rim lighting.
Kollsman Instrument Division	505SD-01	B-C			106A/25	For use on 2-wire, 12-volt aircraft, 3-volt rim lighting.
	505SD-05	B-C			106A/776	For use on 2-wire, 12-volt aircraft, 3-volt rim lighting.
	505S-01	B			106A/28	Single wire circuit, 3-volt rim lighting.

INTERCHANGEABILITY NOTE: AN5743-1 (A. E. Reference Number 60-1200; F. S. S. C. Number 88-C-583) is installationally interchangeable with the above models. It differs in that it is not individually lighted. Therefore, it is to be considered interchangeable if this lighting feature is adaptable.



CLOCKS INSTRUMENTS—NAVIGATION



← 3 ¹/₈" APPROX. →



CLOCK—8-DAY—ELAPSED TIME

ARMY TYPE A-10

NAMES: 8-day elapsed time clock

Jewel clock

Clock—13 jewel

Clock assembly—13 jewel

Clock—aircraft—8-day elapsed time

Chronoffite (fluorescent) clock

Clock, type A-10 (aircraft)

Eight-day clock

Airplane clock

Navigation clock

DESCRIPTION: This Army type A-10 clock, with an 8-day movement, is housed in a vented aluminum case.

It includes a chronograph mechanism (start-stop-fly back) with separate totalizer hand (60 minutes) and sweep second hand. An elapsed time dial with the start-stop-fly back control indicates hours and minutes elapsed, and has a time out feature.

CHARACTERISTICS:

Size.....	round dial, 2 ³ / ₄ inches diameter
Weight.....	approximately ³ / ₄ pound
Movement.....	chronograph type, 8-day, 13 jewel stem wind and set
Lighting.....	phosphorescent and radioactive luminous markings
Dial type.....	12-hour

ARMY

A. E. REFERENCE NUMBER: 60-1150

SPECIFICATIONS:

Detail..... 94-27961

Superseded..... 27961

MANUFACTURER: Jaeger Watch Company

MANUFACTURER'S MODEL IDENTIFICATION: 3860

TYPE DESIGNATION: A-10

A. S. C. STOCK NUMBER: 6000052765

TECHNICAL ORDER NUMBER: 05-1-9

PRODUCTION STATUS: Under procurement. Will be superseded by AN5741-1 clock when available.
Latter incorporates additional civil date dial.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1115



CLOCKS INSTRUMENTS—NAVIGATION



CLOCK—8-DAY ELAPSED TIME CIVIL DATE

AN5741-1

FORMER ARMY TYPE A-10

F. S. S. C. NUMBER 88-C-573

NAMES: 8-day elapsed time civil date clock
Civil date elapsed time clock
Clock—aircraft 8-day elapsed time
Eight day clock

Airplane clock
Navigation clock
Elapsed time clock

DESCRIPTION: This Army-Navy clock, with an 8-day movement, is housed in a vented case and incorporates a chronograph mechanism with hour, minute and second hands. A sweep second hand and stop mechanism is included with a jump-type minute totalizer (up to 60 minutes) to show the total movement of the sweep hand. An elapsed time indicator (hours and minutes up to 12 hours) and a civil date indicator is also provided.

CHARACTERISTICS:

Dial type.....	24-hour
Dial diameter.....	2 3/4 inches
Dimensions.....	approximately 3 1/4 by 3 1/4 by 2 1/4 inches
Weight.....	approximately 1.0 pound
Movement.....	8-day, 15-jewel, stem wind back ratchet and stem set
Lighting.....	fluorescent markings

ARMY

A. E. REFERENCE NUMBER: 60-1160

SPECIFICATIONS:

Detail.....	AN-C-62
Superseded.....	94-27961

AN DRAWING NUMBER: AN5741

AN PART NUMBER: AN5741-1

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....	AN-C-62
Superseded.....	SQ-116

AN DRAWING NUMBER: AN5741, superseding BuAer drawing 884-SK

AN PART NUMBER: AN5741-1

F. S. S. C. STOCK NUMBER: 88-C-573

TECHNICAL NOTE NUMBER: BuAer Aircraft Instrument Handbook, Chapter 23

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	British Reference Number
Elgin National Watch Co.	1782	N	
Hamilton Watch Co.	37590	N	
Jaeger Watch Co.	3920	N-B	106A/980

INTERCHANGEABILITY NOTE: F. S. S. C. Number 88-C-590 is installationally interchangeable with the above models. The features provided in this model are not the same as those above. Therefore, interchangeability is dependent upon those features deemed necessary for the installation concerned.



CLOCKS INSTRUMENTS—NAVIGATION



← 2 $\frac{3}{8}$ " APPROX. →

CLOCK—7 JEWEL UNLIGHTED

AN5743-1 FORMER ARMY TYPE A-11 F. S. S. C. NUMBER 88-C-583

NAMES: 7 jewel—unlighted clock
Clock, aircraft (1 $\frac{7}{8}$ inch round dial)
Clock—8-day
Clock, type A-11 (aircraft)

Eight-day clock
Airplane clock
Navigation clock

DESCRIPTION: This clock has a square flange and a vented aluminum case. It has an eight-day stem wind movement, with a sweep second hand. The winding knob is at the lower left of the case.

CHARACTERISTICS:

Size.....	round dial, 1 $\frac{7}{8}$ inches diameter
Weight.....	approximately $\frac{3}{5}$ pound
Movement.....	8-day, 7-jewel, stem wind; back ratchet and stem set
Lighting.....	fluorescent luminescent markings
Dial type.....	12-hour

ARMY

A. E. REFERENCE NUMBER: 60-1200

SPECIFICATIONS:

General.....	94-27220-C
Detail.....	AN-C-99
Superseded.....	94-27970-A

AN DRAWING NUMBER: AN5743

AN PART NUMBER: AN5743-1

TECHNICAL ORDER NUMBER: 05-1-9

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

Detail.....	AN-C-99
Superseded.....	BuAer Spec. SQ-87

AN DRAWING NUMBER: AN5743

F. S. S. C. NUMBER: 88-C-583

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

(Continued on Page 259)



CLOCK—7 JEWEL UNLIGHTED

(Continued from Page 258)

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Bulova Watch Co.	21AE	21AE	A-B			106A/529	
Elgin National Watch Co.	1776	1776	A-B	6000052800	05-1-9	106A/529	
Waltham Watch Co.	22809-S-12	22809-S-12	A-B-N			106A/529	22 size, 9 jewel.
Longines-Wittnauer Watch Co., Inc.	63-EAFF	63-EAFF	A-B	6000052830	05-1-9	106A/529	
	19-41	19-41	A-B	6000052890			
Pioneer Instrument Division	3310	3310-A	C				
	3311	3311-A	C				Has elapsed time hand.
	3315-2B	3315-A	A-B	6000048835		106A/529	7-jewel, 8-day movement, bottom winding and setting knob.
	3310	3310-2A-A	B-C			106A/20	7-jewel, 8-day movement, bottom winding and setting knob.
	3310	3310-2B-A	C				Bottom winding and setting knob; 7-jewel.
	3311	3311-2A-A	B-C			106A/144	
Kollsman Instrument Division	505-01	505-01	B-C	6000048915		106A/529	Luminous and fluorescent dial.
	505K-01	505K-01	B-C			106A/324	Luminous dial, split case.

INTERCHANGEABILITY NOTE: Army type A-9 (A. E. Reference Number 60-1100) is installationally interchangeable with the above models. It differs in that it has an individually lighted case. Therefore, it is to be considered interchangeable if the lighting feature is adaptable.



COMPASSES INSTRUMENTS—NAVIGATION

COMPASS—ASTRO

ARMY TYPE A-1 NAVY MARK 2
BRITISH MARK II

NAMES: Astro compass
Compass astro A-1
Compass astro for use with 05A standard
(Navy)

DESCRIPTION: This instrument is used to provide the navigator with a true heading of the aircraft, and to swing and correct the magnetic compass reading during flight. It is mounted on a base described on page 261.

The instrument contains scales for setting latitude, longitude and data obtained from an almanac based on the time and date. When this data is set in, the instrument is rotated until a chosen star is sighted. The true bearing of the airplane is read on a resultant scale. A transit case, made of plastic and plywood, including a shoulder strap, is furnished for carrying the compass.

CHARACTERISTICS:

Dimensions.....approximately 9 inches high by 5 inches diameter
Weight.....approximately 1 $\frac{3}{4}$ pounds

ARMY

A. E. REFERENCE NUMBER: 60-1225

SPECIFICATIONS:

General.....AN-C-92

AN DRAWING NUMBER: AN5738

AN PART NUMBER: AN5738-1

TYPE DESIGNATION: A-1

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Carton dimensions.....approximately 12 $\frac{1}{8}$ by 7 $\frac{7}{8}$ by 9 inches

Gross weight.....approximately 6 $\frac{1}{4}$ pounds

NAVY

TYPE DESIGNATION: Mark 2

SPECIFICATIONS:

General.....AN-C-92

AN DRAWING NUMBER: AN5738

AN PART NUMBER: AN5738-1

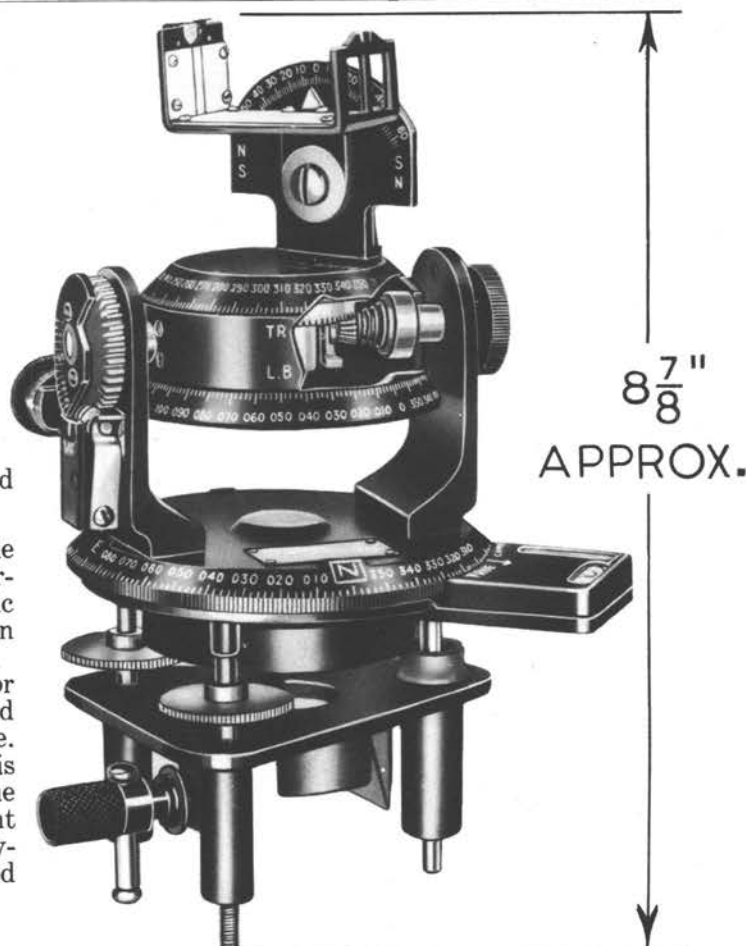
F. S. S. C. NUMBER: 88-C-770

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Sperti, Inc.	D-500	A-N-B	6200025785	05-15-10	106A/1088
The W. W. Boes Co.	94	A-N-B	6200025775	05-15-10	106A/1088

NOTE: The British stores reference number for this item is 6A/1174.





STANDARD—ASTRO COMPASS

ARMY TYPE O-5 NAVY TYPE O5A

NAMES: Astro compass standard
 Standard—compass—astro
 Standard for use with Mark II astro compass
 Standard for compass—astro A-1
 Base assembly—astro compass standard

DESCRIPTION: This standard, or base, is a mount for the astro compass. The base is permanently installed in the airplane in such a position as to properly align the astro compass with the airplane axis. The design permits removal of the astro compass when not in use.

CHARACTERISTICS:

Height.....	approximately 2 $\frac{3}{8}$ inches
Outside diameter of cylinder.....	approximately 2 $\frac{1}{4}$ inches
Diameter at base.....	approximately 3 $\frac{1}{4}$ inches
Weight.....	approximately 4 $\frac{1}{4}$ ounces

ARMY

A. E. REFERENCE NUMBER: 60-1226

SPECIFICATIONS:

General.....None

AN DRAWING NUMBER: AN5738

AN PART NUMBER: AN5738-2

TYPE DESIGNATION: O-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....approximately 3 $\frac{1}{2}$ by 3 $\frac{3}{8}$ by 3 inches

Gross weight.....approximately 5 $\frac{1}{2}$ ounces

NAVY

TYPE DESIGNATION: O5A

AN DRAWING NUMBER: AN-5738

F. S. S. C. NUMBER: 88-S-1310

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A—Army, N—Navy, B—British, C—Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
The W. W. Boes Co.	102	A-N-B	6200026425	05-15-10	106A/1017
Sperti, Inc.	D-102	A-N-B	6200026435	05-15-10	106A/1017
Scott Aviation Corp.	1276	A-N-B	6200026445	05-15-10	106A/1017

NOTE: British (United Kingdom Assigned) reference number is 6A/3660.



DIRECT READING MAGNETIC COMPASSES

The compass is used to determine the direction of the airplane with reference to the earth's magnetic field.

Airplane compasses are divided into two general classes; pilot's compasses, which are installed in or above the instrument panel for use by the pilot, and navigator's compasses, which are installed on a table or on the floor for use by the navigator.

Compass readings should be taken while the airplane is flying straight and level at a constant speed. The variation which exists between magnetic North and true North cannot be reduced or eliminated, but is constant for all headings in the same locality, and may be allowed for. Deviation error, due to magnetic influences in the airplane, may be eliminated or reduced. This error varies with different headings in the same locality.

Pilot's compasses are direct reading magnetic type compasses. They consist of a fluid-filled bowl which contains a pivoted float bearing magnetized needles. The float is suspended so that the needles are free to align themselves horizontally with the earth's magnetic field. One end of a magnetic needle, called the North-seeking end, always points toward magnetic North when freely suspended.

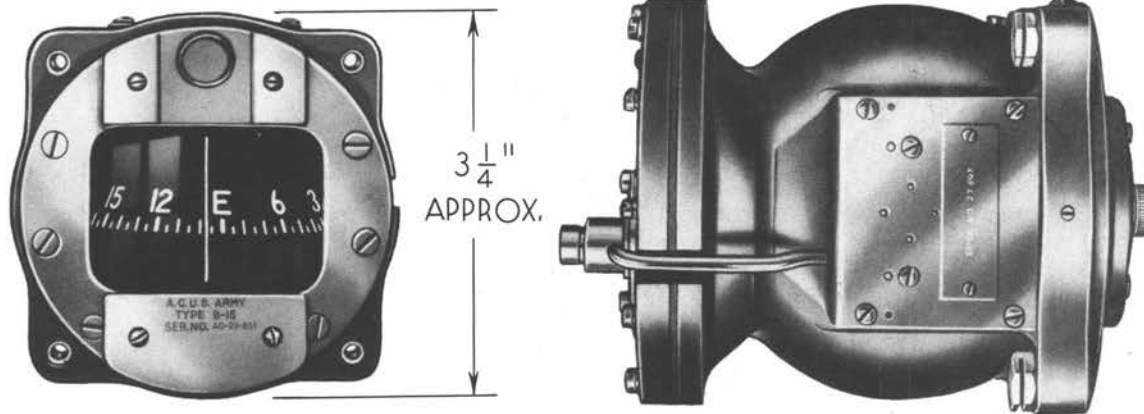
In such compasses, the position of a graduated card attached to the float is visible through a glass cover in the front of the bowl. The bowl is filled with compass fluid to dampen the movement of the card, which is marked with the cardinal headings (North, East, South and West). In steady flight, the needles point continuously toward magnetic North. A box, containing magnets which compensate for deviation, is located on top of the compass.

The lubber's line, a piece of thin metal placed vertically in the center of the glass cover or window, intersects the card, to show the direction in which the airplane is pointing.

The navigators' direct reading compass is known as an aperiodic (without a period) compass, since the needle returns to rest quickly and without appreciable overswing when deflected from its position. Radial arms or vanes attached to the card dampen the swing of the needle.

This type of compass is mounted horizontally, and is read through a glass cover on the top. The compass consists primarily of a cylindrical metal bowl filled with compass fluid. In the center of the bowl is a semi-float type card to which are attached the magnetized needles and the radial arms. The card is marked with the four cardinal points, with an arrow indicating North. Inside the bowl, a fixed mark acts as the lubber's line. A graduated rotatable ring, (verge) with two clamping screws, is fastened to the upper edge of the compass bowl. Across the inside of the ring are two horizontal, parallel white wires, spaced equally on either side of the N and S markings. In making readings, the ring is turned until the two white wires are parallel to the North-South lines on the card. The airplane heading is read as the marking on the ring which is directly above the lubber's line.

A box containing magnets which may be turned to compensate for deviation is located on the bottom of the compass.



COMPASS—PILOT'S

AN5733-1 FORMER ARMY TYPE B-16 F. S. S. C. NUMBER 88-C-783

NAMES: Pilot's compass
Compass—vertical dial
Pilot's card type magnetic compass

Compass—pilot's card type
Magnetic fluorescent compass—vertical dia

A description which embodies its constructional features and operating characteristics will be found in paragraphs 3, 4 and 5 of the general description of Direct Reading Magnetic Compasses on page 262.

DESCRIPTION: The Army-Navy magnetic compass, AN5733-1, may be mounted either on the pilot's instrument panel or on a bracket in the cockpit.

CHARACTERISTICS:

Dimensions	approximately 3 1/4 by 3 1/4 by 4 1/2 inches
Weight	approximately 1 1/2 pounds
Dial size	approximately 2 by 1 1/6 inches
Illumination	individual; two wire, 3 volt lamp
Markings: Principal	fluorescent radioactive material
Minor	fluorescent material

ARMY

A. E. REFERENCE NUMBER: 60-1250

SPECIFICATIONS:

Detail AN-C-79
Superseded 94-27807

AN DRAWING NUMBER: AN5733

AN PART NUMBER: AN5733-1

TYPE DESIGNATION: Former Army B-16

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton	approximately 6 by 6 by 6 inches
Gross weight	approximately 1 1/2 pounds

NAVY

SPECIFICATIONS: Detail AN-C-79

AN PART NUMBER: AN5733-1

F. S. S. C. NUMBER: 88-C-783

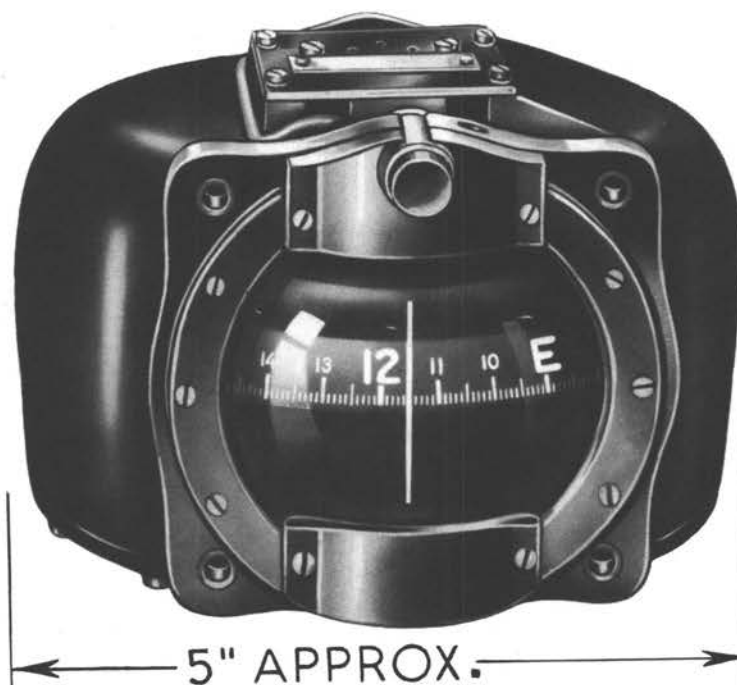
PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 3 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Airpath Instrument Corp.	CB-1000	A-B	6000067455	05-15-2	106A/34	Now designated AN5733-1
	CBO-1000	A-B	6000067460	05-15-2	106A/34	
	CBU-1000	A-B	6000067465	05-15-2	106A/34	
	C-1000	B-C			106A/34	
	CU-1000	B-C			106A/34	
	CO-1000	B-C			106A/34	
Kollsman Instrument Division	758	A-N-B	6000067450	05-15-9	106A/34	May be mounted front or back.
Pioneer Instrument Division	1803A-1	A-N-B	6000067750	05-15-2	106A/34	
	1803-1-A	A-N-B	6000067475	05-15-2	106A/34	
	1803-1-B	A-N-B	6000067500	05-15-2	106A/34	
	1818-1-A	A-N-B	6000068000	05-15-2	106A/34	
	1803A-2	B-C	6000067800		106A/34	
	1818-3-A	B-C	6000055450		106A/34	



COMPASSES INSTRUMENTS—NAVIGATION



COMPASS—PILOT'S
ARMY TYPE B-17

NAMES: Pilot's compass

Compass—vertical dial

DESCRIPTION: A description of the constructional features and operating characteristics of the Army type B-17 pilot's compass will be found in paragraphs 3, 4 and 5, page 262. It is mounted on the pilot's instrument panel.

CHARACTERISTICS:

Dimensions.....	approximately 5¼ by 5¼ by 6 inches
Weight.....	approximately 3 pounds
Dial size.....	approximately 2½ by 1⅞ inches
Illumination.....	individual: one wire, 3-volt lamp
Markings:	
Principal.....	radioactive material
Minor.....	white paint

ARMY

A. E. REFERENCE NUMBER: 60-1300

SPECIFICATIONS:

General.....	94-27180
Detail.....	94-27815

TYPE DESIGNATION: B-17

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton.....	approximately 6 by 6 by 6 inches
Gross weight.....	approximately 4 pounds

NAVY

There is no Navy equivalent for this item.

MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number
Pioneer Instrument Division	1813	1813-1-A	A	6000068750	05-15-2	106A/414
	1813	1813-1-B	A	6000069000	05-15-2	106A/414
	1813	1813-2-B	A-C	6000069025		106A/414
	1815	1815-2-A	C			106A/414



COMPASS—NAVIGATOR'S

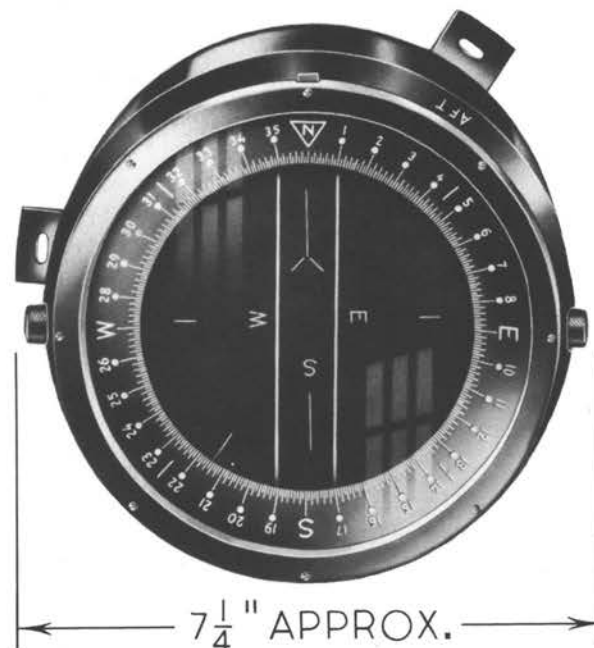
ARMY TYPE D-12 F. S. S. C. NUMBER 88-C-845

NAMES: Navigator's compass
Compass assembly—navigation
Compass—top reading
Compass, navigation (aircraft) long-period

DESCRIPTION: The Army type D-12 navigator's compass is aperiodic, and indicates magnetic north with no appreciable overswing. A more complete description is given on page 262. It may be mounted on a table or on the floor.

CHARACTERISTICS:

Dimensions	approximately 4 $\frac{3}{8}$ inches high by 7 inches diameter
Weight	approximately 6 $\frac{1}{2}$ pounds
Dial size	5 $\frac{3}{4}$ inches diameter
Illumination	none
Markings:	
Principal	radioactive material
Minor	white paint



ARMY

A. E. REFERENCE NUMBER: 60-1400

SPECIFICATIONS:

General	94-27180
Detail	94-27825

A. A. F. DRAWING NUMBER: 34B2148 (compensator assembly)

TYPE DESIGNATION: D-12

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of carton	approximately 12 by 12 by 9 inches
Gross weight	approximately 9 pounds

NAVY

BUREAU OF AERONAUTICS DRAWING NUMBER: 898-SK

F. S. S. C. STOCK NUMBER: 88-C-845

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A—Army, N—Navy, B—British, C—Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Pioneer Instrument Division	1801	1801-1A	A-N-B	6000059250	05-15-2	106A/428	
	1801A	1801A-1	A-B	6000059500	05-15-2	106A/428	
	1832	1832-1-A	A-B	6000059550	05-15-2	106A/428	
	1832	1832-3-A	N-B			106A/428	
	1826	1826-1-A	N-B			106A/428	
	1801	1801-2A	B-C			106A/428	
	1826	1826-2-A	B-C			106A/428	
	1802A	1802A-1	A-C	6000060000			Army type D-13. 4 $\frac{1}{2}$ inch diameter.
	1802	1802-1-A	A-B-C			106A/32	Army type D-13. 4 $\frac{1}{2}$ inch diameter.
	1802	1802-2-A	B-C			106A/32	4 $\frac{1}{2}$ inch diameter.
Victor Adding Machine Co.	1802	1802-2-B	B-C			106A/32	4 $\frac{1}{2}$ inch diameter.
	1801	1801-1-A-VA	A-B	6000059275	05-15-2	106A/428	



GYRO FLUX GATE COMPASS SYSTEM

The gyro flux gate compass is a remote indicating instrument designed to supply an accurate and continuous directional reading which is not affected by turns, banks, climbs, dives, yawing or bumpy weather.

The transmitter, which contains the flux gate, is mounted in that part of the airplane which contains the least metallic equipment, in order to reduce magnetic disturbances and compass deviation caused by the engines, guns, turrets and other metallic equipment of the airplane. The flux gate, the sensitive element in the compass, is a coil which picks up the signal from the earth's magnetic field and transmits it to an indicator. The flux gate is stabilized by a vertically spinning electrical gyro, to maintain a fixed position in relation to the earth's surface regardless of the airplane's position.

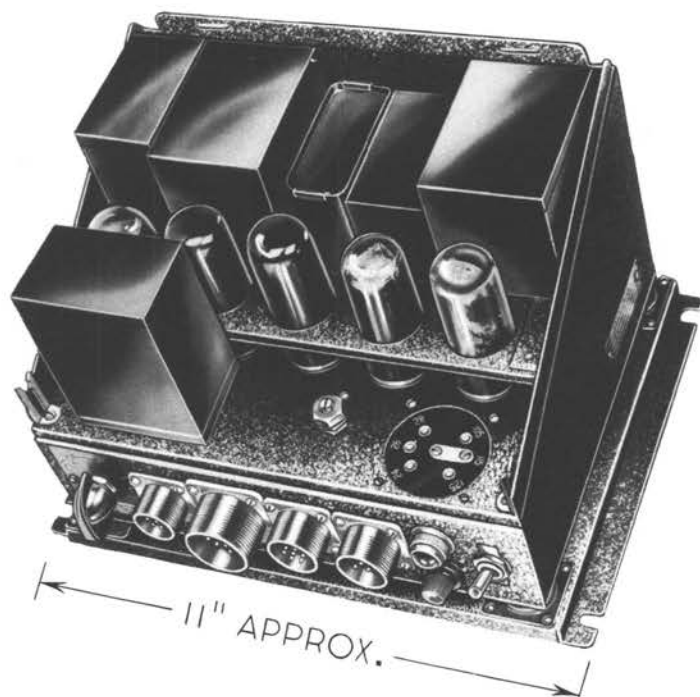
The signal picked up by the flux gate is continuously transmitted by an autosyn motor to a master indicator capable of re-transmitting the signal to other indicators where the compass reading is duplicated, in as many as six stations in the aircraft. These are referred to as repeater indicators. An amplifier containing radio tubes strengthens the electrical signal at the master indicator, to make possible its transmission to the repeater indicators.

Provision has been made for caging the gyro to prevent damage when the power is off, or when the airplane engages in maneuvers in which deviations from the flight position exceed 65 degrees. Caging the gyro may be done by a manual control mounted beneath the gyro and connected to it by a flexible shaft, or by an electrical control remotely located in a switch box.

Compensation for the magnetic variations found on the earth's surface are made by adjusting a knob which rotates the outer dial of the master indicator. Repeater indicators display the corrected readings.

Detailed information concerning the component parts of the compass listed below will appear on the following pages:

Amplifier	AN5753-1	Page 267
Caging Unit (electrical)	AN5754-1	Page 268
Caging Unit (manual)	AN5755-1	Page 273
Repeater Indicator	AN5730-2A or AN5730-6	Page 270 Page 275
Master Indicator	AN5752-1	Page 269
Switch Box	AN5756-1	Page 272
Transmitter	AN5751-1	Page 271



AMPLIFIER—GYRO FLUX GATE COMPASS

AN5753-1 F. S. S. C. NUMBER 88-A-500

NAMES: Gyro flux gate compass amplifier
Amplifier—unit gyro flux gate compass

Amplifier—compass—gyro flux gate (Navy)
Compass—gyro flux gate—amplifier unit

DESCRIPTION: This is a component part of the gyro flux gate compass, described in detail on page 266. It amplifies the signal transmitted from the master indicator to the repeater indicators.

CHARACTERISTICS:

Location.....	near navigator
Weight.....	approximately 12½ pounds
Dimensions.....	approximately 11 by 9¾ by 7 inches
Electrical plugs.....	AN3106-16S-1S to transmitter
	AN3106-20-1S to master indicator
	AN3106-14S-2S to repeater indicator
	AN3106-16S-4S to 400 cycle supply source

ARMY

A. E. REFERENCE NUMBER: 60-1351

SPECIFICATIONS:

General.....	AN-GG-C-555
Detail.....	AN-A-6

AN DRAWING NUMBER: AN5753

AN PART NUMBER: AN5753-1

MANUFACTURER'S DESIGNATION: Pioneer Inst. Part Number 12003-1-A

A. S. C. STOCK NUMBER: 6000024500

TECHNICAL ORDER NUMBER: 05-15-7

PRODUCTION STATUS: Under procurement.

SHIPPING DATA:

Dimensions of carton.....	approximately 12¼ by 10¼ by 9½ inches
Gross weight.....	approximately 14¾ pounds

NAVY

SPECIFICATIONS:

General.....	AN-GG-C-555
Detail.....	AN-A-6
Superseded.....	SE-30

AN DRAWING NUMBER: AN5753

AN PART NUMBER: AN5753-1

F. S. S. C. NUMBER: 88-A-500

TECHNICAL NOTE NUMBER: Pioneer Manual.

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1248



AN5754-1 F. S. S. C. NUMBER 88-C-1355

Drive—remote electrically operated caging

CHARACTERISTICS:

Weight.....	approximately 2 pounds
Dimensions.....	approximately 3½ by 6½ inches
Electrical plug.....	AN3102-14S-2P

A. E. REFERENCE NUMBER: 60-1352

SPECIFICATIONS:

General.....AN-GG-C-555
Detail.....AN-D-4

AN DRAWING NUMBER: AN5754

AN PART NUMBER: AN5754-1

MANUFACTURER'S DESIGNATION: Pioneer Inst. Part Number CM-2

A. S. C. STOCK NUMBER: 6000096675

TECHNICAL ORDER NUMBER: 05-15-7

PRODUCTION STATUS: Under procurement.

SHIPPING DATA:

Dimensions of carton.....	approximately 8 by 5¾ by 4½ inches
Gross weight.....	approximately 2½ pounds

SPECIFICATIONS:

General.....	AN-GG-C-555
Detail.....	AN-D-4

AN DRAWING NUMBER: AN5754

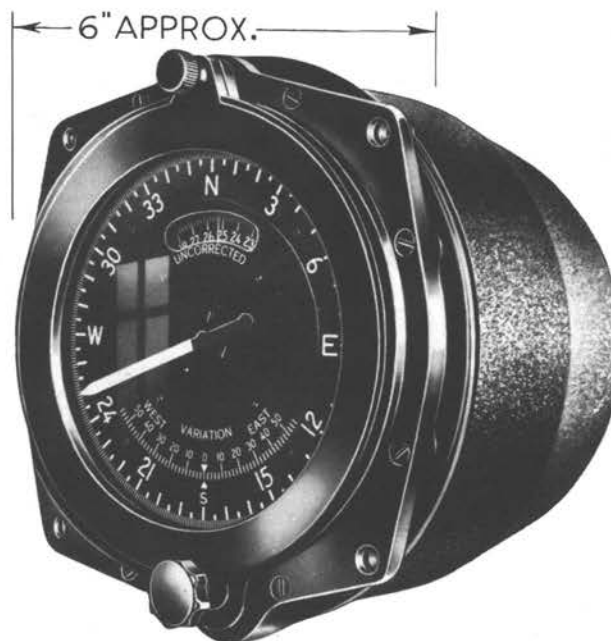
AN PART NUMBER: AN5754-1

F. S. S. C. NUMBER: 88-C-1355

TECHNICAL NOTE NUMBER: Pioneer Manual

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH REFERENCE NUMBER: 106A/1251



INDICATOR—GYRO FLUX GATE COMPASS MASTER

AN5752-1 F. S. S. C. NUMBER 88-I-1670

NAMES: Gyro flux gate compass master indicator
Indicator—master compass—gyro flux gate
(Navy)

Indicator assembly—master gyro flux gate
compass
Compass—gyro flux gate—master indicator

DESCRIPTION: This is a component part of the flux gate gyro compass. It indicates the compass direction received from a remotely located transmitter, and re-transmits this indication to repeater indicators in various stations throughout the aircraft.

CHARACTERISTICS:

Method of mounting	horizontal or vertical
Weight	approximately 6½ ounces
Dial size	approximately 4 inches
Depth	approximately 7 inches
Electrical plugs	AN3106-20-1S
Markings	Major—radioactive material Minor—phosphorescent material

ARMY

A. E. REFERENCE NUMBER: 60-1353
SPECIFICATIONS:
General.....AN-GG-C-555
Detail.....AN-I-7
AN DRAWING NUMBER: AN5752
AN PART NUMBER: AN5752-1
MANUFACTURER'S TYPE DESIGNATION: Pioneer Instrument Part Number 12001-1A-A-1
A. S. C. STOCK NUMBER: 6000224500
TECHNICAL ORDER NUMBER: 05-15-7
PRODUCTION STATUS: Under procurement.
SHIPPING DATA:
Dimensions of carton...approximately 9 by 9 by 10 inches
Gross weight.....approximately 7½ pounds

NAVY

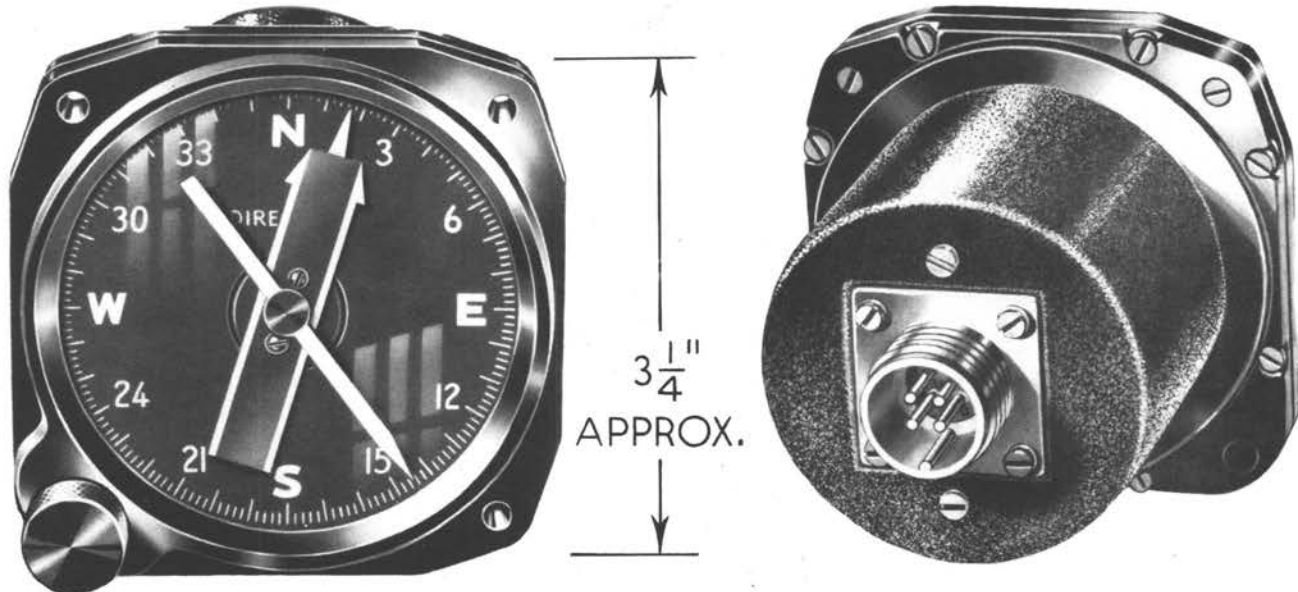
SPECIFICATIONS:
General.....AN-GG-C-555
Detail.....AN-I-7
AN DRAWING NUMBER: AN5752
AN PART NUMBER: AN5752-1
F. S. S. C. STOCK NUMBER: 88-I-1670
TECHNICAL NOTE NUMBER: Pioneer Manual
PROCUREMENT STATUS: Standard.
G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER:
106A/1246



COMPASSES INSTRUMENTS—NAVIGATION



INDICATOR—REMOTE INDICATING MAGNETIC COMPASS

AN5730-6 F. S. S. C. NUMBER 88-I-801

NAMES: Remote indicating magnetic compass indicator
Compass—indicator—remote magnetic
Indicator assembly—remote indicating
compass—magnetic
Indicator—compass remote indicating—
magnetic (Navy)
Gyro flux gate compass repeater indicator

Indicator—repeater compass—gyro flux gate
Indicator assembly—repeater—gyro flux gate
compass
Compass—gyro flux gate—repeater indicator
Indicator—compass remote indicating—
magnetic (Navy)

DESCRIPTION: This indicator can be used with either the Remote Indicating Magnetic Compass, or with the Gyro Flux Gate Compass as a secondary indicator. The indicator records the compass direction, which is transmitted electrically from a remotely located transmitter. This instrument was designed primarily for installation on Night Fighters.

CHARACTERISTICS:

Dimensions.....	approximately 3 1/4 by 3 1/4 by 3 1/4 inches
Weight.....	approximately 1 1/2 pounds
Dial size.....	2 3/4 inches diameter
Electrical connector.....	AN3106-14S-2S
Markings.....	Fluorescent marking only

INTERCHANGEABILITY NOTE: A. E. Reference Number 60-1451 may not be used in lieu of this instrument because it has radioactive dial markings; however, A. E. Reference Number 60-1454 may be used to replace the former in case of emergency.

ARMY

A. E. REFERENCE NUMBER: 60-1454

SPECIFICATIONS:

General.....AN-GG-C-555;
AN-GG-C-566a
Superseded.....27996

AN DRAWING NUMBER: AN5730

AN PART NUMBER: AN5730-6

TECHNICAL ORDER NUMBER: 05-15-5

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

MANUFACTURER: Pioneer Instrument Division of Bendix Aviation Corporation. Part Number 10061-1L-B1

NAVY

SPECIFICATIONS:

General.....AN-GG-C-566a;
AN-GG-C-555
Superseded.....Navy Aeronautical
C-108

AN DRAWING NUMBER: AN5730

AN PART NUMBER: AN5730-6

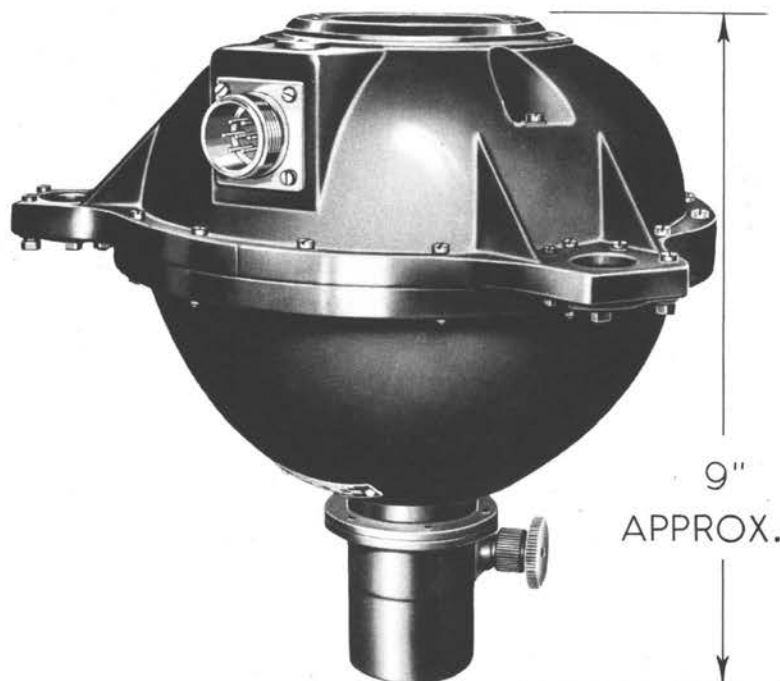
F. S. S. C. NUMBER: 88-I-801

TECHNICAL NOTE NUMBER:

Pioneer Overhaul Manual

PROCUREMENT STATUS: Standard.

G. F. E.—Order through A. S. O. by
F. S. S. C. number.



TRANSMITTER—GYRO FLUX GATE COMPASS

AN5751-1 F. S. S. C. NUMBER 88-T-1900

NAMES: Gyro flux gate compass transmitter
Compass—gyro flux gate transmitter

Transmitter—compass—gyro flux gate (Navy)

DESCRIPTION: This is a component part of the gyro flux gate compass. The transmitter contains the gyroscopically stabilized flux gate, which is sensitive to the earth's magnetic field. It transmits the signal by autosyn motor to a remotely located master indicator.

CHARACTERISTICS:

Location.....	wing or tail
Weight.....	approximately 7½ pounds
Depth.....	approximately 9 inches
Diameter.....	approximately 8⅜ inches

ARMY

A. E. REFERENCE NUMBER: 60-1355

SPECIFICATIONS:

General.....	AN-GG-C-555
Detail.....	AN-T-24

AN DRAWING NUMBER: AN5751

AN PART NUMBER: AN5751-1

MANUFACTURER'S DESIGNATION: Pioneer Instrument Part Number 12002-1-A

A. S. C. STOCK NUMBER: 6000424000

TECHNICAL ORDER NUMBER: 05-15-7

PRODUCTION STATUS: Under procurement.

SHIPPING DATA:

Dimensions of carton.....	approximately 13 by 13 by 12 inches
Gross weight.....	approximately 11½ pounds

NAVY

SPECIFICATIONS:

General.....	AN-GG-C-555
Detail.....	AN-T-24
Superseded.....	SE-30

AN DRAWING NUMBER: AN5751

AN PART NUMBER: AN5751-1

F. S. S. C. NUMBER: 88-T-1900

TECHNICAL NOTE NUMBER: Pioneer Manual

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1247



SWITCH BOX—GYRO FLUX GATE COMPASS

AN5756-1 F. S. S. C. NUMBER 88-S-1380

NAMES: Gyro flux gate compass switch box
Compass—gyro flux gate—switch box
Box—gyro flux gate switch

Switch—caging control—remote compass gyro
flux gate (Navy)

DESCRIPTION: This is a component part of the gyro flux gate compass. The switch box contains the remote electrical control for caging the gyro when power is shut off or when the aircraft is engaged in violent maneuvers.

CHARACTERISTICS:

Method of mounting.....	vertical, and visible to navigator
Weight.....	approximately $\frac{1}{2}$ pound
Dimensions.....	approximately $4\frac{7}{8}$ by $3\frac{1}{4}$ by 3 inches
Electrical plug.....	AN3102-14S-2P

ARMY

A. E. REFERENCE NUMBER: 60-1356

SPECIFICATIONS:

General.....	AN-GG-C-555
Detail.....	AN-B-8

AN DRAWING NUMBER: AN5756

AN PART NUMBER: AN5756-1

MANUFACTURER'S DESIGNATION: Pioneer Instrument part number CQ-1

A. S. C. STOCK NUMBER: 6000349725

TECHNICAL ORDER NUMBER: 05-15-7

PRODUCTION STATUS: Under procurement.

SHIPPING DATA:

Dimensions of carton.....	approximately $5\frac{1}{4}$ by $3\frac{3}{4}$ by $3\frac{3}{4}$ inches
Gross weight.....	approximately $1\frac{1}{8}$ pounds

NAVY

SPECIFICATIONS:

General.....	AN-GG-C-555
Detail.....	AN-B-8

AN DRAWING NUMBER: AN5756-1

AN PART NUMBER: AN5756-1

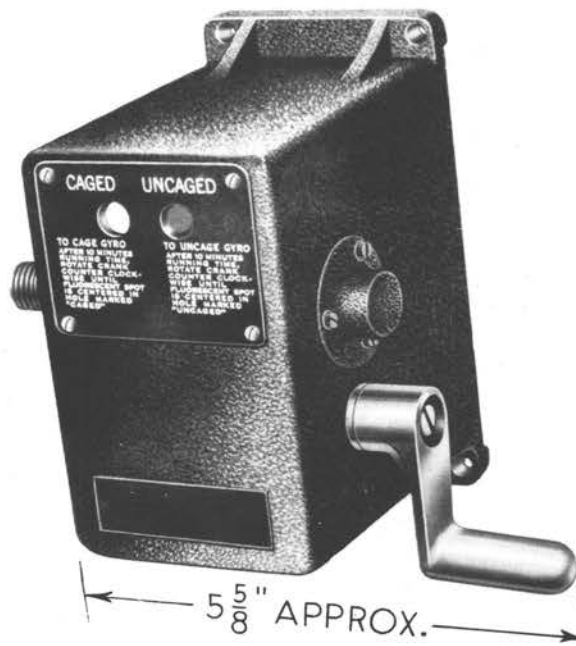
F. S. S. C. NUMBER: 88-S-1380

TECHNICAL NOTE NUMBER: Pioneer Manual

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1253



CONTROL—GYRO FLUX GATE MANUAL CAGING

AN5755-1 F. S. S. C. NUMBER 88-C-1350

NAMES: Gyro flux gate manual caging control
Control—gyro flux gate compass
Control—caging—compass gyro flux gate—
manual (Navy)

Compass—gyro flux gate—manual caging control
Caging control—gyro flux gate compass—
manual
Drive—remote manual operated caging

DESCRIPTION: This is a component part of the gyro flux gate compass. It is used to manually cage or uncage the gyro.

CHARACTERISTICS:

Method of mounting	vertical
Weight	approximately 1 1/8 pounds
Dimensions	approximately 5 5/8 by 5 3/8 by 4 1/4 inches

ARMY

A. E. REFERENCE NUMBER: 60-1357

SPECIFICATIONS:

General	AN-GG-C-555
Detail	AN-D-5

AN DRAWING NUMBER: AN5755

AN PART NUMBER: AN5755-1

MANUFACTURER'S DESIGNATION: Pioneer Instrument part number CM-1

A. S. C. STOCK NUMBER: 6000096660

TECHNICAL ORDER NUMBER: 05-15-7

PRODUCTION STATUS: Under procurement.

SHIPPING DATA:

Dimensions of carton	approximately 7 by 6 by 4 1/2 inches
Gross weight	approximately 1 1/2 pounds

NAVY

SPECIFICATIONS:

General	AN-GG-C-555
Detail	AN-D-5

AN DRAWING NUMBER: AN5755

AN PART NUMBER: AN5755-1

F. S. S. C. NUMBER: 88-C-1350

TECHNICAL NOTE NUMBER: Pioneer Manual

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

BRITISH

BRITISH REFERENCE NUMBER: 106A/1252



REMOTE INDICATING MAGNETIC COMPASS

When a compass installation free from magnetic deviation is required, the remote indicating magnetic compass may be used. It consists of:

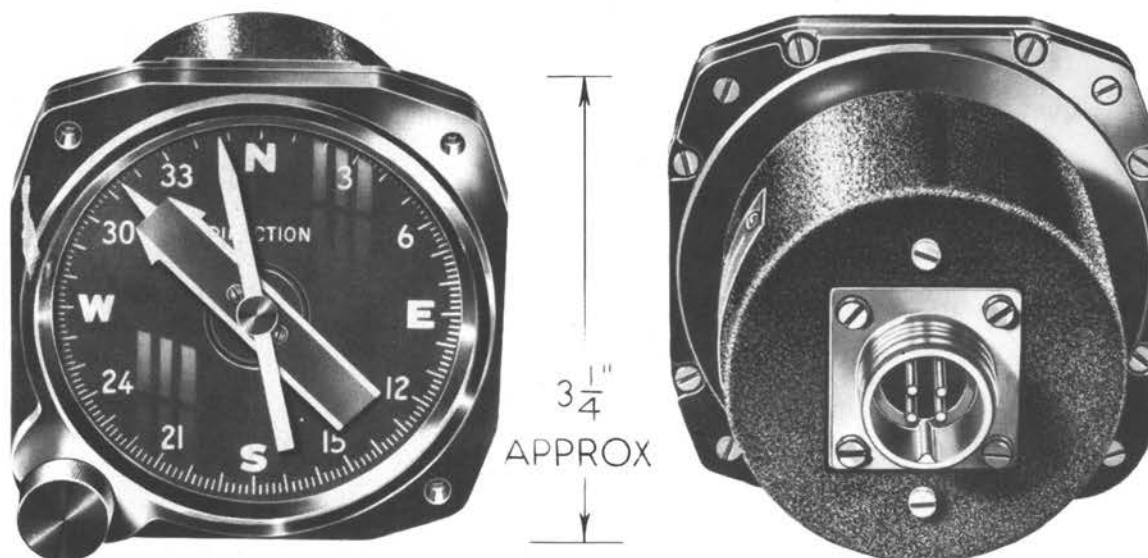
- | | |
|----------------|----------------------------|
| a. Transmitter | AN5730-3 |
| b. Indicator | AN5730-2A or AN5730-6 |
| c. Inverter | Pioneer Part No. 12117-6-A |

The transmitter containing the compass magnet and float can be operated in any part of the aircraft where local magnetic disturbances caused by engines, guns, turrets, ammunition, etc., are at a minimum. The reading is electrically transmitted to the indicators, which are mounted in a location convenient for reference. Indicators are not affected by local magnetic disturbances, and from one to three indicators may be operated from one transmitter.

The remote indicating magnetic compass system can operate on any combination of frequency and voltage where the frequency is 13 to 17 times the voltage, i.e., 400 cycles, 26 volts; or 800 cycles, 52 volts. An inverter is used for changing direct current from storage batteries to alternating current for operation of the system. In most cases, the same inverter which operates other electrical systems in the airplane may also be used for the compass.

The indicator face is usually installed in an upright position, and a pointer moves across it showing the direction of flight. A knob for setting a manually-controlled indicating pointer to the desired course is located in the lower left-hand corner of the instrument. When the settings of this pointer and those of the compass pointer coincide, the airplane is headed in the desired direction.

Detailed information concerning the transmitter, indicator and inverter which make up this compass is given in the three pages which follow.



INDICATOR—REMOTE INDICATING MAGNETIC COMPASS

AN5730-2A F. S. S. C. NUMBER 88-I-800

NAMES: Remote indicating magnetic compass indicator
Compass—indicator—remote magnetic
Indicator assembly—remote indicating compass—magnetic
Indicator—compass remote indicating—magnetic (Navy)
Gyro flux gate compass repeater indicator

Indicator—repeater compass—gyro flux gate
Indicator assembly—repeater—gyro flux gate compass
Compass—gyro flux gate—repeater indicator
Indicator—compass remote indicating—magnetic
(Navy)

DESCRIPTION: This indicator can be used with either the Remote Indicating Magnetic Compass or as a secondary indicator with the Gyro Flux Gate Compass. The indicator records the compass direction, which is transmitted electrically from a remotely located transmitter.

CHARACTERISTICS:

Dimensions.....	approximately 3¼ by 3¼ by 3¼ inches
Weight.....	approximately 1½ pounds
Dial size.....	2¾ inches diameter
Electrical connector.....	AN3106-14S-2S
Markings.....	Major, radioactive material Minor, fluorescent material

ARMY

A. E. REFERENCE NUMBER: 60-1451. Former A. E.
Reference Number 60-1354

SPECIFICATIONS:

General AN-GG-C-555; AN-GG-C-566a
Superseded 27996

AN DRAWING NUMBER: AN5730

AN PART NUMBER: AN5730-2A

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

SPECIFICATIONS:

General.....AN-GG-C-566a: AN-GG-C-555

Superseded.....Navy Aeronautical C-108

AN DRAWING NUMBER: AN5730

AN PART NUMBER: AN5730-2A

F. S. S. C. NUMBER: Refer to chart.

TECHNICAL NOTE NUMBER: Pioneer Overhaul
Manual

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

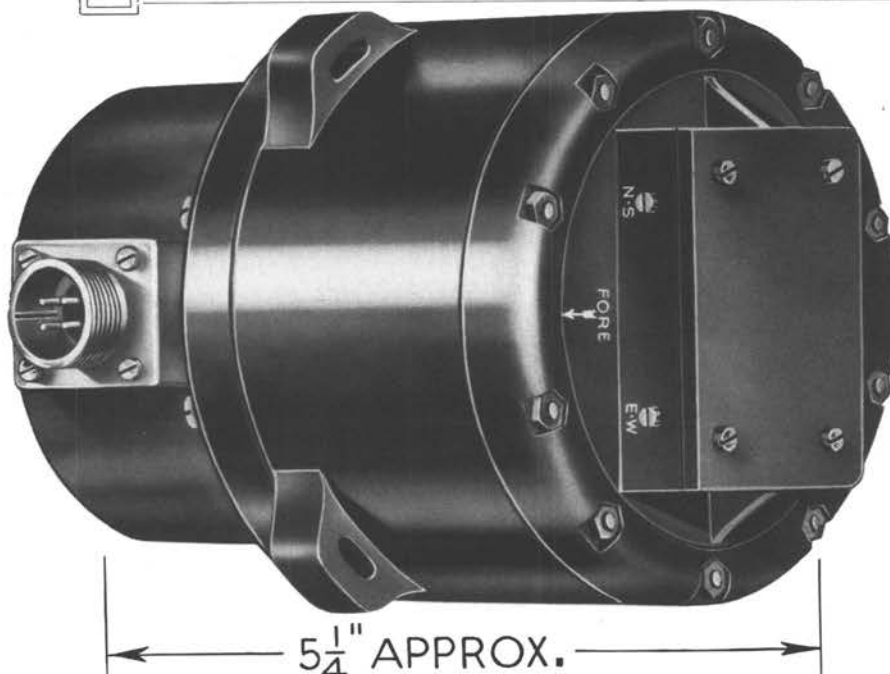
ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Dial Markings	Used By	AN Part Number	Air Service Command Stock Number	Army Technical Order Number	F. S. S. C. Number	British Reference Number
Pioneer Instrument Division	10061-1A-A1	Luminous & fluorescent	A-N-B	AN5730-2A	6000232190	05-15-5	88-I-800	106A/1250
	10061-1E-A1	Luminous & fluorescent	A-N-B	AN5730-2A	6000232195	05-15-5	88-I-800	106A/1250
	10061-1H-A1	Luminous & fluorescent	A-N-B	AN5730-2A	6000232220	05-15-5	88-I-800	106A/1250
	10061-1E-B1	Luminous & fluorescent	N-B	AN5730-2A			88-I-800	106A/1250
	10061-1D-A1	Luminous & fluorescent	B-C					106A/1250
	10061-1A-A2	Luminous & fluorescent	C					
	10061-1D-A2	Luminous & fluorescent	B-C					106A/1250
	10061-1E-A2	Luminous & fluorescent	C					
	*10065-1A-A1	Luminous & fluorescent	N	AN5730-2A			88-I-800	
**10061-1L-B1	Fluorescent only	A-N	AN5730-6		05-15-5	88-I-801		

*Mark 1 Model 0 for Flying boats.

**Night Fighter type, A. E. Reference Number 60-1454, may be substituted for other types in an emergency.

COMPASSES INSTRUMENTS—NAVIGATION



TRANSMITTER—REMOTE INDICATING MAGNETIC COMPASS

AN5730-3 F. S. S. C. NUMBER 88-T-1950

NAMES: Remote indicating magnetic compass transmitter
Remote reading magnetic compass transmitter
Transmitter—remote indicating compass
Transformer—compass remote indicating (Navy)
Compass—transmitter—remote reading magnetic

DESCRIPTION: This is a component part of the AN5730 Remote Indicating Magnetic Compass. The transmitter contains the compass elements and an alternating current motor which transmits the compass direction to the indicator mounted remotely in the pilot's cockpit.

CHARACTERISTICS:

Location.....in wing or tail
Weight.....approximately 2 $\frac{3}{4}$ pounds
Dimensions.....approximately 5 $\frac{3}{16}$ by 5 $\frac{5}{8}$ inches
Electrical plug.....AN3106-14S-2S

ARMY

A. E. REFERENCE NUMBER: 60-1452

SPECIFICATIONS:

General.....AN-GG-C-566a
AN DRAWING NUMBER: AN5730
AN PART NUMBER: AN5730-3
A. S. C. STOCK NUMBER: Refer to chart.
TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

Dimensions of
carton.....approximately 6 $\frac{1}{4}$ by 6 $\frac{1}{4}$
by 6 $\frac{3}{4}$ inches

Gross weight...approximately 3 $\frac{1}{2}$
pounds

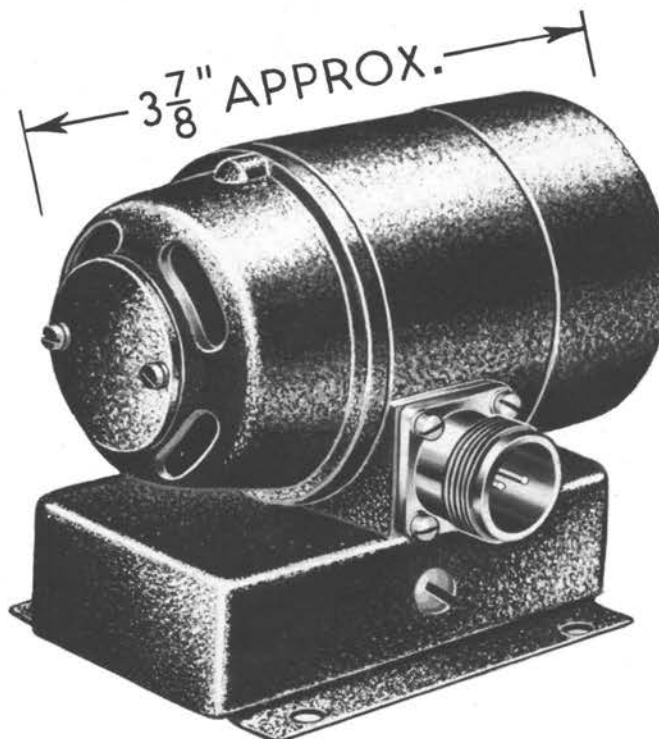
NAVY

SPECIFICATIONS:

General.....AN-GG-C-566a
AN DRAWING NUMBER: AN5730
AN PART NUMBER: AN5730-3
F. S. S. C. STOCK NUMBER: 88-T-1950
TECHNICAL NOTE NUMBER: Pioneer
Overhaul Manual
PROCUREMENT STATUS: Standard. G.F.E.
—Order through A. S. O. by F. S. S. C.
number.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
Pioneer Instrument Div.	10062-1-A	A-N-B	6000437900	05-15-5	106A/1124	
	10066-1-A	N				Mark 1 Model O—for flying boats.
	10062-2-A	B-C			106A/1124	



INVERTER—REMOTE INDICATING MAGNETIC COMPASS

F. S. S. C. NUMBERS—SEE CHART

NAMES: Remote indicating magnetic compass
inverter

Remote reading magnetic compass inverter

Inverter—remote indicating compass

Compass—inverter—remote indicating magnetic

Dynamotor—remote reading compass

DESCRIPTION: This inverter transforms direct current from the aircraft electrical system to alternating current for the use of the remote indicating compass, AN5730.

CHARACTERISTICS:

Weight.....approximately 2 pounds
Dimensions.....approximately 3 1/4 by 3 7/8 by 3 1/2 inches
Electrical plug.....AN3106-12S-3S

ARMY

A. E. REFERENCE NUMBER: See chart.

SPECIFICATIONS:

General.....94-32270-A

A. S. C. STOCK NUMBER: See chart.

TECHNICAL ORDER NUMBER: 05-15-6

PRODUCTION STATUS: Under procurement.

SHIPPING DATA:

Dimensions of carton.....approximately 4 by 4 by 4 inches
Gross weight.....approximately 2 1/8 pounds

NAVY

F. S. S. C. NUMBER: See chart.

PROCUREMENT STATUS: Standard. G. F. E.—Order through A. S. O. by F. S. S. C. number.

TABULATED ITEMS—NO INTERCHANGEABILITY

Models are used in services as noted in column 5
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part and Drawing Number	Input Voltage	Output Voltage	Used By	A. E. Reference Number	British Reference Number	Air Service Command Stock Number	F. S. S. C. Number
Pioneer Instrument Division	12117-6-A	24-28 volts D.C.	26 volts, 400 cycles	A-N-B	60-1453	106A/1141		88-I-4050
	12117-5-A	12-14 volts D.C.	26 volts, 400 cycles	A-N-B	60-1460	106A/1140		88-I-4000
	12117-2-A	24-28 volts D.C.	26 volts, 400 cycles	A-B		106A/1023	6000262775	



COMPUTER—AERIAL DEAD RECKONING

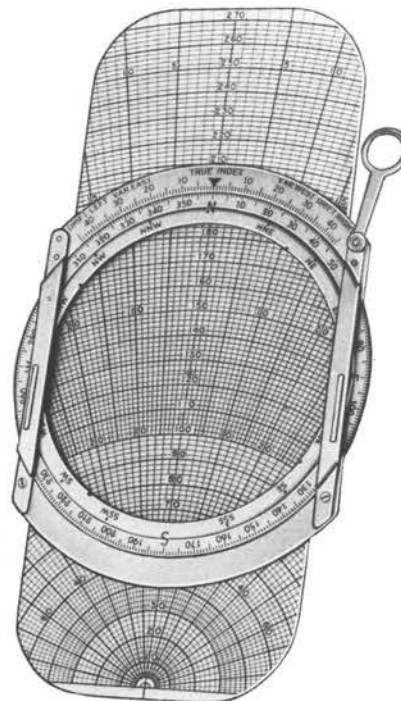
AN5835-1 FORMER ARMY TYPE E-6B FORMER NAVY TYPE AN1

NAMES: Aerial dead reckoning computer
 Computer assembly—aerial dead reckoning
 Dead reckoning computer
 Computer—navigational—dead reckoning (Navy)
 Calculator—dead reckoning

DESCRIPTION: The dead reckoning computer is designed to simplify navigational calculations. When known factors are applied to the computer, it is possible to obtain corrected air speed, altitude, and drift computations. It also has a circular slide rule equipped with a means for plotting the true compass direction on a flight, eliminating the use of the triangulation method.

The face of the computer consists of a plotting disc framed by a graduated compass rose. The plotting disc is made of transparent plastic material on which pencil lines may be drawn and erased. A slide imprinted with lines indicating speed and drift variations may be moved back and forth under the plotting disc.

The back of the computer is a plastic circular slide rule for speed-time-distance computations, with additional scales for airspeed and altitude corrections.



CHARACTERISTICS:

Markings.....	luminescent material
Weight.....	approximately $\frac{1}{4}$ pound
Dimensions of slide.....	approximately $9\frac{1}{2}$ by $3\frac{7}{8}$ inches
Overall diameter of computer.....	approximately $5\frac{3}{4}$ inches

ARMY

A. E. REFERENCE NUMBER: 45-3550

SPECIFICATIONS:

Detail.....	AN-C-74a
Superseded.....	94-27892

AN DRAWING NUMBER: AN5835

AN PART NUMBER: AN5835-1

TYPE DESIGNATION: Former Type E-6B

A. S. C. STOCK NUMBER: Refer to column 5 of the chart.

TECHNICAL ORDER NUMBER: Refer to column 6 of the chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: AN5835-1 (former Navy type AN1)

SPECIFICATIONS:

Detail.....	AN-C-74a
Superseded.....	AN-C-74

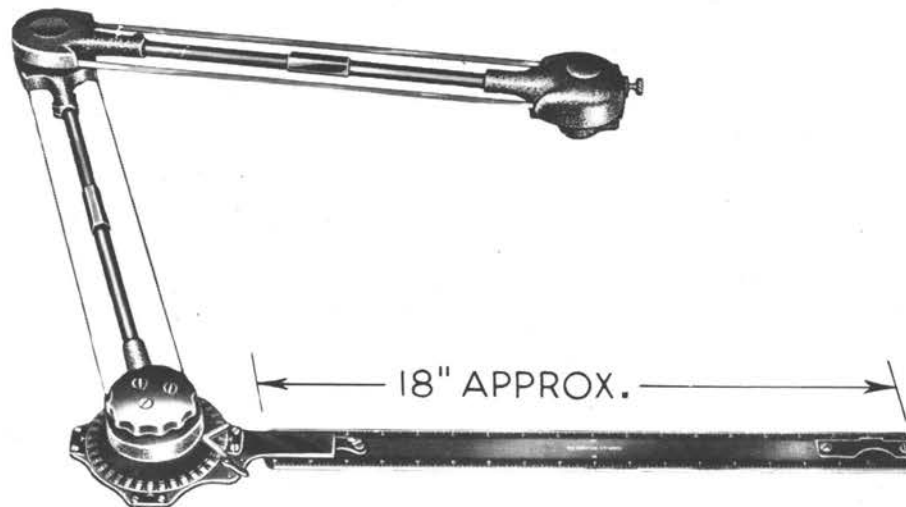
AN DRAWING NUMBER: AN5835

F. S. S. C. NUMBER: 88C1120

PROCUREMENT STATUS: Under procurement.

**Models are used in services as noted in column 4
 A-Army, N-Navy, B-British, C-Commercial**

Manufacturer	Manufacturer's Part Number	Manufacturer's Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	Remarks
J. B. Carroll Co.	100	100	A-N-B	6200079748	05-35-9	106B/9	
The Star Watch Case Co.	E-6B-100	E-6B-100	A-N-B	6200079740	05-35-9	106B/9	
Cruver Manufacturing Co.	1150	1150	A-N-B	6200079775	05-35-9	106B/9	Metal computer
	1140	1140	A-N-B	6200079755	05-35-9	106B/9	Plastic computer
Stanley Manufacturing Co.	118	118	A-N-B	6200079785	05-35-9	106B/9	
General Luminescent Corp.	1811	1811	A-N-B	6200079788	05-35-9	106B/9	
G. Felsenthal & Sons	FAA-4	FAA-4	A-N-B		05-35-9	106B/9	Brass computer
	FAA-8	FAA-8	A-N-B	6200079745	05-35-9	106B/9	Plastic computer



MACHINE—AIRCRAFT NAVIGATIONAL DRAFTING

AN5750-1 F. S. S. C. NUMBER 88-P-945 FORMER NAVY MARK III B

NAMES: Aircraft navigational drafting machine
Protractor

Drafting table protractor
Aircraft protractor

DESCRIPTION: This is an universal type drafting machine, with scales and protractor adapted to navigational use.

CHARACTERISTICS:

Weight	Instrument and box approximately 8 pounds
Weight	Instrument only approximately 4½ pounds
Scale length	18 inches
Protractor	360 degrees
Arm length (extended)	approximately 36 inches

ARMY

A. E. REFERENCE NUMBER: 60-8150

SPECIFICATIONS:

Detail AN-M-6

MANUFACTURER'S DRAWING NUMBER: Charles Bruning Company, Number 2832

AN DRAWING NUMBER: AN5750 (supersedes Army drawing H42A5292)

AN PART NUMBER: AN5750-1

A. S. C. STOCK NUMBER: 8700583900 (Mark III B)

PRODUCTION STATUS: Not under procurement for initial installation.

SHIPPING DATA: Shipped as a complete unit.

NAVY

TYPE DESIGNATION: Former type Mark III B

SPECIFICATIONS:

Detail AN-M-6

Superseded 18-P-5

AN DRAWING NUMBER: AN5750

AN PART NUMBER: AN5750-1

F. S. S. C. STOCK NUMBER: 88-P-945

TECHNICAL NOTE: BuAer Aircraft Instrument Handbook, Chapter 19

PROCUREMENT STATUS: Sub-standard. Superseded by F. S. S. C. Number 88-M-58.

BRITISH

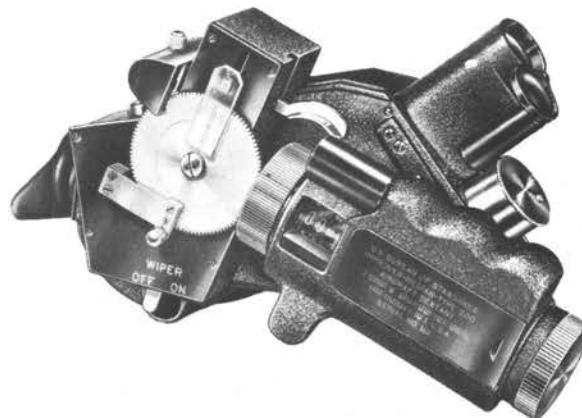
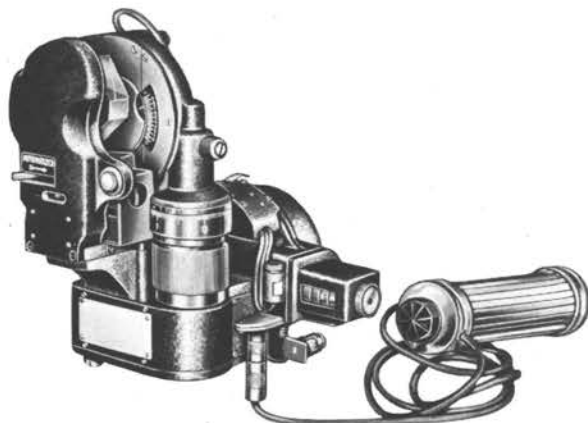
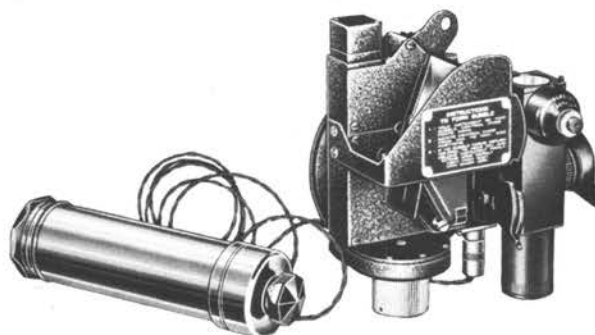
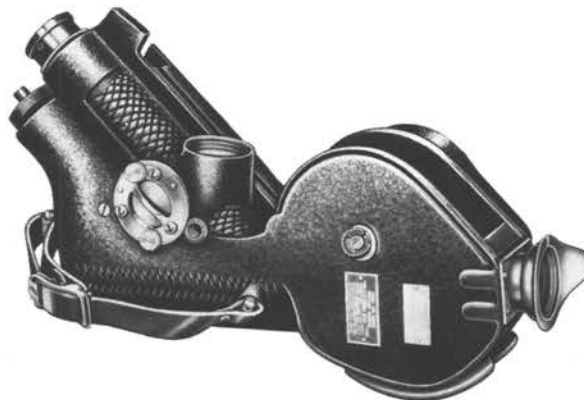
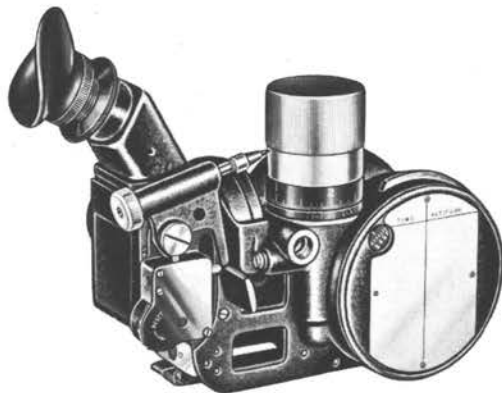
BRITISH REFERENCE NUMBER: 106B/21



AIRCRAFT SEXTANTS

NAMES: Bubble type sextant
Octant

Sextant—aircraft—averaging bubble type



DESCRIPTION: A sextant is an instrument used by navigators to measure the altitude of the sun, stars, or other celestial bodies. From these measurements, and with the aid of an almanac, it is possible to determine the observer's position on the earth's surface.

The altitude of a celestial body is the angle formed between imaginary lines drawn from the observer to the body and to the horizon. Marine navigators use the natural horizon as a reference but, unless an airplane is flying in daylight at less than 1000 feet above sea level and visibility is good, the aerial navigator cannot use the natural horizon.

(Continued on page 281)

AIRCRAFT SEXTANTS

(Continued from page 280)

To provide a horizon reference, airplane sextants incorporate a bubble which acts as an artificial horizon. When using the bubble horizon the image of the celestial body is caused to coincide with the center of the bubble, and a recording counter, or graduated arc, enables the observer to read the altitude of the observed body above the bubble horizon. This artificial horizon is accurate only when the observer is stationary or moving at a uniform rate of speed. Accelerations in an airplane cause the bubble to be deflected from the vertical so that an error is introduced when the bubble is aligned with the celestial body for a sight or "shot." This error may be as much as one degree (equivalent to a 60-mile error in position). To reduce this error, aircraft sextants have averaging devices, and a number of

sights are taken over a one- or two-minute period. Averaging errors usually enables the navigator to find his position within 5 miles.

Various averaging devices are used, the median averager being the most common. In this type, a pencil makes a mark on a drum when a sight is taken. At the end of two minutes, the navigator sets a pointer on the center of the marks and reads the altitude. Chronometric averaging devices employ clockwork which automatically records the average altitude when the navigator follows the movements of the celestial body over a two-minute period.

Internal artificial lighting permits a sextant to be used in taking sights at night by providing an illuminated bubble.

ARMY

A. E. REFERENCE NUMBER: 60-8500 (Former A. E. REFERENCE NUMBER: 45-9000)

Type	Specification	Drawing Number	Part Number
Former A-12	AN-S-29	AN5852	AN5852-1
None	AN-S-28	AN5851	AN5851-1
A-10	None	See chart	See chart
A-8A	94-27914A	See chart	See chart
A-7	94-27912	See chart	See chart

PRODUCTION STATUS: Under procurement except for A-7.

SHIPPING DATA: Shipped as a unit, complete with carrying case.

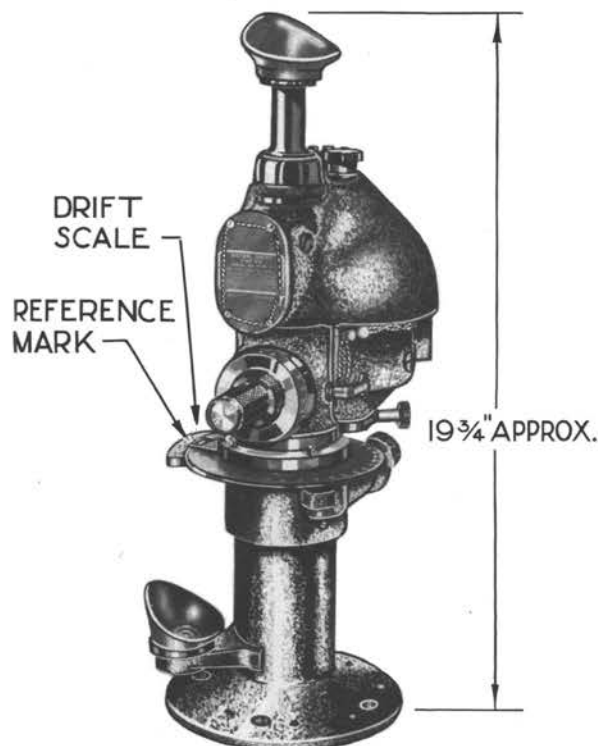
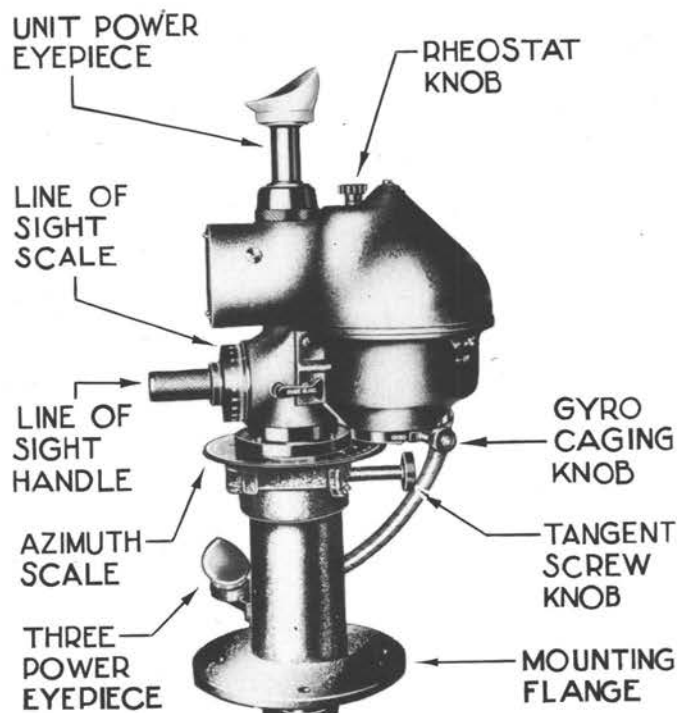
NAVY

PROCUREMENT STATUS: See chart for sextants under procurement.

ALL MODELS ON THIS PAGE ARE INTERCHANGEABLE
Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Type Designation	Manufacturer's Drawing and Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Number	F. S. S. C.	Natural Horizon Provision	Weight	Bubble Field Illumination	Averaging Device	Battery Container	Remarks
Pioneer Instrument Division of Bendix Aviation Corp.	AN5851-1	3014-1-C	A-N-B	6200327978	05-35-22	106B/53	88-S-350	Yes	7 pounds	Dark	Chronometric	Separate	
	AN5851-1	3014-1-D	A-N-B	6200327980	05-35-22	106B/53	88-S-350	Yes	7 pounds	Dark	Chronometric	Separate	
Link Aviation Devices, Inc.	A-12	11734	A-N-B	6200330975	05-35-15	106B/152	88-S-360	No	5¾ pounds	Bright	Median	Integral	British Designation C-9 See Note 1.
Fairchild Aviation Corp.	A-10	E-320-D1	A-B	6200330937	05-35-12	106B/50		No	6 pounds	Dark	Median	Separate	
Bausch & Lomb Optical Co.	A-8A	29499	A-B	6200330925	05-35-7	106B/49		Yes		Dark	Automatic (8 observations)	Integral	
Pioneer Instrument Division of Bendix Aviation Corp.	A-7	Part 3003-A Drawing PD-23431-1	A-B	6200330900	05-35-4	106B/48		Yes	6 pounds	Dark	Automatic (8 observations)	Integral	Not under procurement.
	A-7	Part 3003-B Drawing PD-23431-2	A-B	6200330905	05-35-4	106B/48		Yes	6 pounds	Dark	Automatic (8 observations)	Integral	Not under procurement.
	A-7	Part 3011-A Drawing PD-17633-1	A-B		05-35-4	106B/48		Yes	6 pounds	Dark	Automatic (8 observations)	Integral	Not under procurement.
	A-7	Part 3011-B Drawing PD-17633-2	A-B		05-35-4	106B/48		Yes	6 pounds	Dark	Automatic (8 observations)	Integral	Not under procurement.

NOTE 1. The A-12 sextant is intended for instruction purposes only, but may be used in the field if no other types are available.



METER—DRIFT ARMY TYPE B-3

NAMES: Drift meter
Recorder drift

Sights drift

DESCRIPTION:

FUNCTION:

The B-3 drift meter is a navigational instrument which has three distinct functions. It derives its name from its most important function, which is the measurement of the angle between the heading of the aircraft and its actual path over the ground. This angle is known as a drift angle, and it is caused by contrary cross winds.

A secondary function is the measurement of the horizontal angle between the heading of the aircraft and any object; this angle is known as an azimuth bearing. The meter may also be used to determine the true ground speed of the aircraft.

INSTALLATION:

The drift meter is mounted vertically in the navigator's compartment by a circular mounting flange; its periscopic tube extends from 5 to 6 inches below the fuselage.

COMPOSITION:

For the sake of analysis, the drift meter can be divided into three systems: A. Optical system; B. Gyroscopic system; C. Control system.

A. The Optical System:

The optical system is nothing more than a periscope which is coupled with a means of reticle reflection. The reticle is a glass plate upon which radio-active lines are etched. The reflection and superimposition of these lines on the image of a sighted object is accomplished by a series of prisms and lenses. The source of illumination for the reticle is a small lamp. The density of light is controlled by a rheostat.

B. The Gyroscopic System:

The gyro is driven by a small alternating current motor at the speed of ten thousand six hundred revolutions per minute.

The sole purpose of the gyroscope is to keep the reticle plate parallel to the ground, thereby affording a fixed reference from which the drift reading can be taken. The gyro will perform this function effectively when the roll and pitch of the aircraft is not more than twenty degrees from the normal flight position. In excess of these limits, the gyro should be caged to protect its delicate mechanism.

C. The Control System:

The controls coordinate and calibrate the movement of the optical and gyroscopic systems.

The primary optical control is the line of sight handle, which is used to adjust the line of sight through the periscope from seventeen degrees forward to eighty-seven degrees aft. The movement of this handle is recorded on a scale located on its flange.

A tangent screw knob is used to pivot the entire upper gyro housing and lower periscopic tube. The mounting flange and the lower gyro housing are cast in one piece, and are immovable. The movement of the upper housing and tube enable the navigator to adjust the reticle lines parallel to the apparent movement of ground objects. The movement of the knob is recorded on the drift scale, which shows the amount of drift in degrees. The knob is actually operated as though it were two controls instead of one, for it has two positions, engaged and disengaged. In the engaged position, it effects a finite control over the pivot movement, thereby giving precision to the drift recording. In the disengaged position, the pivoting is accomplished by pushing or pulling the line of sight handle in the desired direction. This disengaged movement allows rotation of three hundred sixty degrees, and the navigator is thereby able to determine the relative azimuth bearing of any object by reading it in degrees on the azimuth scale.

(Continued on Page 283)



METER—DRIFT

(Continued from Page 282)

The gyro controls consist of a caging knob and a starting switch, which enable the navigator to protect the mechanism, as mentioned before.

A shading lens is installed in the periscope to control the density of objective reflection. This can be turned in or out, depending upon outside lighting conditions.

INTERCHANGEABILITY:

Various models of the B-3 drift meter which have different tube lengths cannot be interchanged from one aircraft to another, due to the fact that this interchanging would necessitate the changing of the tube length. Changing the tube on the drift meter requires a working time of approximately twenty-four hours, and can only be accomplished in a qualified depot by skilled personnel.

Kueffel and Esser formerly produced a B-3 drift meter with a vacuum driven gyro. Since this model is no longer in production, and there is but a very limited number in service, it has not been considered important enough to cover herein. However, no interchangeability can be effected between the electrically driven and the hydraulically driven gyro drift meters, as this would necessitate the installation of entirely different connections in the aircraft.

CHARACTERISTICS:

Weight	approximately 20 to 30 pounds, depending upon the length of the tube
Dimensions above mounting flange	approximately 19 $\frac{1}{16}$ by 11 $\frac{1}{32}$ by 6 $\frac{19}{32}$ inches
Index prism range	17° forward to 87° aft
Electrical supply necessary	110 volt alternating current, 400 cycles

ARMY

A. E. REFERENCE NUMBER: Refer to chart.

SPECIFICATIONS:

Detail	94-27796-A
Superseded	94-27796

TYPE DESIGNATION: B-3

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: 05-25DA-2

PRODUCTION STATUS:

60-8000 under procurement.
60-8005 not under procurement for initial installation.
60-8010 under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.

**Models are used in services as noted in column 4
A-Army, N-Navy, B-British, C-Commercial**

A. E. Reference Number	Tube Length (In Inches)	Pioneer Model Number	Used By	Air Service Command Stock Number	British Reference Number	Current Model (X)
60-8000	27	2902-2A-A	A	6000289890		
	27	2902-2A-B	A-B	6000289895	106B/4	
	27	2902-2A-C	A	6000289896		
	27	2913-2A-A	A	6000289900		
	27	2913-2A-B	A	6000289905		
	27	2914-2A-A	A-B	6000289910	106B/24	
	27	2914-2A-B	A	6000289915		X
	27	2913-2B-A	C			
	27	2914-2B-A	C			
	27	2914-2A-C	C			
60-8005	40	2915-2A-A	A	6000290120		
	40	2915-2A-B	A	6000290130		
	40	2916-2A-A	A	6000289920		
	40	2916-2A-B	A	6000289775	106B/47	X
	40	2916-2B-A	C			
	40	2916-2B-B	C			
	40	2916-2A-C	C			
60-8010	51	2919-2A-A	A	6000290080		X
	51	2919-2A-B	C			



DRIFT METERS INSTRUMENTS—NAVIGATION

METER—DRIFT

ARMY TYPE B-5

NAMES: Drift meter
Recorder drift
Sights, drift

DESCRIPTION: The B-5 drift meter is used to measure the angle between the heading of the airplane and its actual path over the ground. It is also adapted for the determination of ground speed. The instrument reticle is not stabilized. A recording feature averages out the effects of pitch and roll. The instrument tube projects from the side of the airplane.

CHARACTERISTICS:

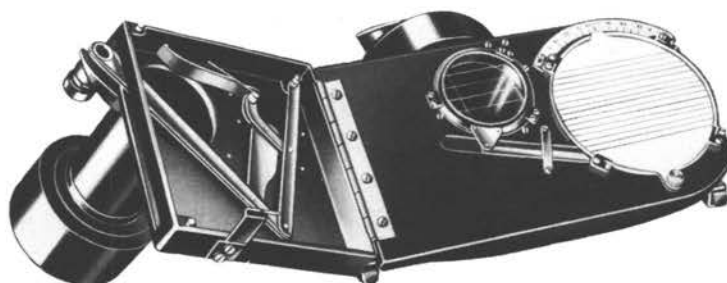
Weight.....approximately 8 pounds

Overall dimensions.....approximately
12 $\frac{1}{4}$ by 9 by
7 $\frac{1}{2}$ inches

Field of view in object

space.....35 degrees

Drift scale limits.....30 degrees right
and left



ARMY

A. E. REFERENCE NUMBER: 60-8050

SPECIFICATIONS:

Detail.....94-27402

Superseded.....27402-1

TYPE DESIGNATION: B-5

A. S. C. STOCK NUMBER: Refer to chart.

TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

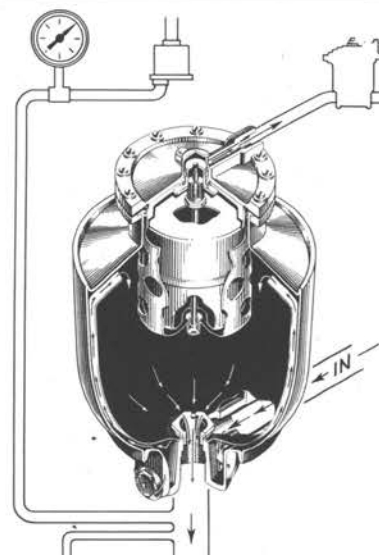
NAVY

There is no Navy equivalent for the Army item.

ALL MODELS BELOW ARE INTERCHANGEABLE
Models are used in services as noted in column 3
A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Part Number	Used By	Air Service Command Stock Number	Army Technical Order Number	British Reference Numbers	
					(American Assigned)	(United Kingdom Assigned)
Canadian Kodak Co.	U-9258	A-B	6000291050*	05-35-20	106B/13	6B/190
Eastman Kodak Co.	U-9258	A-B	6000291050*	05-35-20	106B/13	6B/190
General Analine Film Laboratory, Agfa-Ansco Co.	U-9258	A-B	6000291050*	05-35-20	106B/13	6B/190

*For reference to British Procurement (U. K. 6B/190) use A. S. C. Stock Number 6000291025.



ELIMINATOR—FUEL SYSTEM AIR VAPOR

ARMY TYPE A-6

NAMES: Fuel system air vapor eliminator
Air eliminator

Eliminator

DESCRIPTION: The type A-6 air eliminator is a small fuel reserve tank, located in the fuel system between the fuel pump and the carburetor. It provides a reserve fuel supply, and serves to trap air and vapor which enter the unit through the inlet fuel line. At such times, a float and float valve assembly attached to the tank cover function to vent the eliminator and free the fuel of air and vapor, preventing their entrance into the carburetor.

Since the eliminator is designed to be used with high pressure carburetors, adequate fuel pressure must be maintained on the carburetor during the venting periods. Consequently, it is necessary to use the eliminator in conjunction with an air vapor control valve. This valve is located in the vent line between the eliminator and the fuel tanks.

The eliminator consists of a double shell, the inner one extending about three-quarters of the way to the cover, thereby acting as a dam over which the incoming fuel flows. The fuel passes upward from the inlet through the space between the inner and outer shells, and flows over the inner shell into the reserve space, which represents most of the area of the eliminator. The inner space thus serves the double purpose of providing reserve fuel space and the space needed in which to operate the float.

The reserve fuel contained in the inner chamber keeps the engine supplied with fuel during the time required to switch the fuel selector cock from one fuel supply tank to another.

CHARACTERISTICS:

Overall dimensions	approximately 9 $\frac{3}{8}$ by 6 $\frac{1}{4}$ by 6 $\frac{1}{4}$ inches
Weight	approximately 3 pounds
Fuel capacity	approximately $\frac{1}{2}$ gallon

RELATIONSHIP OF PARTS: Used with:

Air vapor control valve	A. E. Reference Number 61-9600
-------------------------------	--------------------------------

ARMY

A. E. REFERENCE NUMBER: 61-2075

SPECIFICATIONS:

Detail	94-28429
Superseded	28429

A. A. F. DRAWING NUMBER: Formerly made according to A. A. F. drawing number 41D1832, but is now manufactured according to King-Seeley Corp. part and drawing number 3200.

TYPE DESIGNATION: A-6

A. S. C. STOCK NUMBER: 48233200

TECHNICAL ORDER NUMBER: 03-10-24

PRODUCTION STATUS: Under procurement.

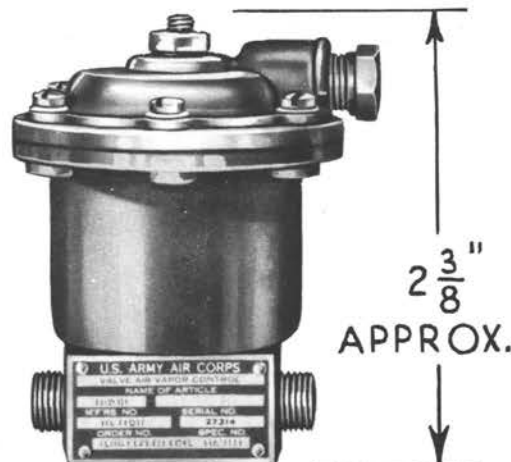
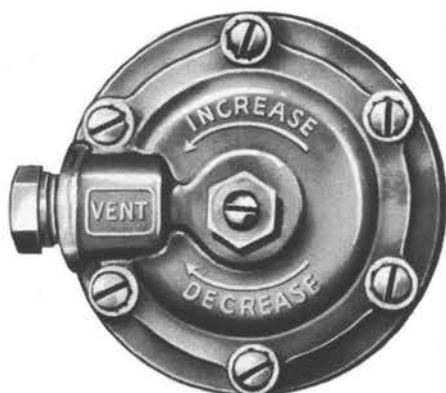
SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



AIR VAPOR CONTROL VALVE INSTRUMENTS—ENGINE



VALVE—AIR VAPOR CONTROL KING-SEELEY CORP. PART NUMBER 32100

NAMES: Air vapor control valve
Pressure control relief valve

DESCRIPTION: This valve is used with the A-6 air vapor eliminator for limiting pressure on the fuel system while the eliminator is in operation. The inlet opening is coupled to the vent connection of the eliminator, and the outlet opening is attached to a line terminating in the top side of the fuel tank. The valve operates as a pressure-setting relief device by venting to the fuel tanks air or vapor delivered by the eliminator, and maintaining a predetermined pressure on the system during the venting period. The setting is adjustable for any pressure from 6 to 14 pounds per square inch. Sufficient pressure is always carried to feed the carburetor, and it is maintained while valves are being turned in changing from one fuel tank to another.

CHARACTERISTICS:

Weight approximately $\frac{1}{2}$ pound
Overall dimensions approximately $2\frac{1}{8}$ by $2\frac{1}{8}$ by $2\frac{3}{4}$ inches

RELATIONSHIP OF PARTS: Used with:

Army type A-6 air vapor eliminator, A. E. Reference No. 61-2075

ARMY

A. E. REFERENCE NUMBER: 61-9600

SPECIFICATIONS: Detail 27314

A. S. C. STOCK NUMBER: Refer to chart.

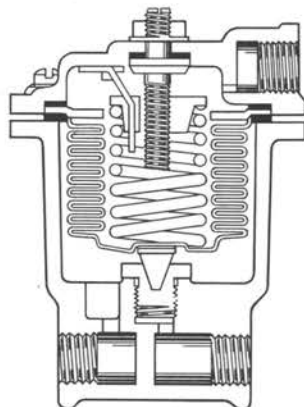
TECHNICAL ORDER NUMBER: Refer to chart.

PRODUCTION STATUS: Under procurement.

SHIPPING DATA: Shipped as a complete unit.

NAVY

There is no Navy equivalent for the Army item.



MODELS BELOW ARE INTERCHANGEABLE Models are used in services as noted in column 4 A-Army, N-Navy, B-British, C-Commercial

Manufacturer	Manufacturer's Model Identification	Manufacturer's Part and Drawing Number	Used By	Air Service Command Stock Number	Army Technical Order Number	Remarks
King-Seeley Corp.	C-2	32100	A	482332100	03-10-23	
	C-2	32040	A	482332040	03-10-23	Superseded by manufacturer's part 32100.
	C-2	32075	A	482332075	03-10-23	Superseded by manufacturer's part 32075.





WALTER L

